



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

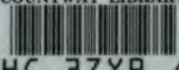
We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>

COUNTWAY LIBRARY



HC 3ZYP /

BOSTON MEDICAL LIBRARY
IN THE
FRANCIS A. COUNTWAY
LIBRARY OF MEDICINE

TWO DOLLARS A YEAR.

SINGLE COPIES 60 CENTS.

THE JOURNAL
OF
COMPARATIVE MEDICINE
AND SURGERY,
A QUARTERLY JOURNAL
OF THE
ANATOMY, PATHOLOGY AND THERAPEUTICS OF THE
LOWER ANIMALS.

WILLIAM A. CONKLIN, Ph.D., V.S.
WILLIAM HENRY PORTER, M.D. } *Editors.*

VOLUME IV.

NEW YORK:
WILLIAM R. JENKINS,
PUBLISHER, BOOKSELLER, STATIONER AND PRINTER,
No. 850 SIXTH AVENUE.
1883.

INDEX.

	Page.
A bacillus or a fat crystal.....	73
Abnormal periods of gestation.....	393
Abortion.....	394
epimiotic oömbia.....	395
in cows.....	199, 139
About cattle liable to.....	224
A cat's attempt at suicide.....	22
Acknowledgement.....	149
A cow as is a cow.....	73
Actinomycosis.....	123
Adams, W. S.—castration statistics.....	293
Adenoma in a dog.....	59
Affinities, physiological, into the blood of animals.....	124
A horse calls on a doctor.....	173
Air space in cow sheds.....	266
Animal forms, causes of changes in.....	12, 94
Anthrax in the hog different from common form.....	251
Arthritis, chronic rheumatic.....	163
Ascaris mystax in cats.....	171
Atavism and reproduction.....	36, 113
Attempts at Veterinary Colleges.....	51
 Bacteria in syphilis.....	 182
Balling of horses, a contrivance to prevent.....	180
Bassi, Prof. R.—cutaneous disease in the horse.....	395
Bates, E. S.—oleum guaietheria.....	139
Bequests to Dick Veterinary College.....	330
Berns, Dr.—bursal enlargement of the tendon of the flexor pedis per- forans.....	237
Billings, Frank S.—the U. S. Government in its relation to contagious animal diseases and the veterinary profession....	263
a case of strychnine poisoning in a dog.....	235
Birds and trichina.....	74
Bitten by a squirrel.....	180
Blinkers.....	237

Blood poisoning.....	82
Books and pamphlets received.....	72, 165, 246, 319
Boston dog destroyer.....	327
Bowels in health and disease, the movements of.....	176
Bower, Dr.—spinal meningitis.....	239
Bowler, G. W.—latent glanders in the horse.....	1
Bronchitis in birds.....	78
Bursal enlargement of the tendon of the flexor pedis perforans.....	237
Cancer of stomach.....	324
Cartilage, the reparative process in.....	252
Carbolic acid in catarrh.....	62
Case department.....	50, 150, 285, 318
Castration statistics.....	281
Cataract, remarkable cure of in a dog.....	332
Cattle plague, the.....	328
Cattle, the breeds of their diseases and treatment.....	56
the treatment of imported.....	260
Chicken cholera.....	320
Cholera in a horse.....	244
Clover bloat.....	327
Clement, A. W.—lesions in a case of immobility.....	150
Comparative physiology, tables in.....	181
dietetics.....	78
pathology, the progress of.....	182
Cerebral congestion.....	262
Consumption and tuberculosis.....	253
Contagious animal diseases.....	263
Contraction of the foot in the horse.....	273
Correspondence.....	64, 234
Cow, softening of bones in the.....	74
Cranial capacity of the horse.....	75
Cruelty to animals.....	256
Cutaneous disease in horse.....	295
Cyst, removal of ; in pointer.....	316
Cystomy, supra-pubic.....	213
Dana, Charles L.—some recent contributions to the physiology of the nervous system of our domestic animals.....	101
Dead animals, removal of.....	327
Delisser, G. P.—idopathic tetanus.....	61
penetrating wound of abdomen.....	159
Dick, Miss.—the late.....	317
Digitaline, influence of.....	172
Diphtheria.....	260
of the bladder in a rabbit.....	173
Diseased meat in Glasgow.....	327

Dolphin, parasitic disease in a.....	74
Domestication of the horse.....	828
Donation to Veterinary College.....	81
Editorials.....	50, 182, 225, 306
Elephants, insane.....	261
sexual mania in.....	54
destroyed by prussic acid.....	326
Elephantiasis in a horse.....	74
Ely, Edward P.—a severe case of spongy iritis in a horse.....	59
Eye in lower animals, some diseases of.....	31, 190
Experiments on animals with male fern.....	175
Exports and imports and quarantine of neat cattle.....	84
Farcy, acute in man.....	321
Fibro-myomata of the uterus of the sea lion.....	174
Filaria oculi occurring in both eyes of a horse.....	182
Flexible anatomical preparation of joints.....	77
Form of the pulse wave.....	177
Fowls, diseased.....	78
Frey, Mark L.—hepatitis in a dog.....	314
Fracture of the internal metatarsal.....	163
os inominata.....	164
femur in a puma.....	321
multiple comminuted, of the sesamoid bones.....	241
of os suffraginis.....	313
treatment of.....	140
Gastric juice of the horse's stomach.....	309
Germ theory, the.....	225
Glanders.....	306, 260
etiology of.....	171
in the horse.....	1
Goats and homœopathy.....	55
milk, the daily yield of.....	81
Hoematuria associated with nephritis.....	161
Hawk, Dr.—pleuro-pneumonia contagiosa.....	243
Heath, A. S. abortion.....	204
are there physiological affinities in the blood of each breed of animals.....	8, 104
Hepatitis in a dog.....	314
Heredity.....	78
History of veterinary medicine and surgery in the U. S., the early....	42
Hock, principal diseases of.....	321
Hog cholera, the germ of.....	179
Homatropine, hydrobromate of.....	74

Horses for food.....	356
family.....	74
railways.....	891
Hospital for animals.....	181
Hydatids of the liver from a camel.....	243
Hydrophobia, death from.....	329
the prevention of.....	178
a case treated successfully with aconite.....	76
Irido-choroiditis.....	234
Induced predisposition to anthrax.....	80
Influence of animal food on the production of wool.....	79
Inoculation of animals for the prevention of pleuro-pneumonia.....	130
monkeys with syphilis.....	171
for pleuro-pneumonia.....	308
Intelligence in animals.....	182
Interesting to veterinary dissectors.....	76
Intestinal calculi.....	162, 242.
disorder in bones.....	77
obstruction.....	174
Iritis in a horse.....	59
Itch in the cat.....	320
Jaundice, a case of.....	240
Jennings, R.—the early history of veterinary medicine.....	42
the teeth of the horse and their diseases.....	121
Journalistic changes.....	140
Keratitis in a dog.....	242
Kidneys, acute parenchymatous degeneration of the.....	87
in a mare.....	156
Lameness.....	215, 298
simple.....	240
Legislation regarding neat cattle.....	84
Lesion in a case of immobility.....	150
Lindsay, John.—treatment of chronic catarrh by carbolic acid.....	62
recurring cystic tumors of the supra-scapular region.....	157
acute parenchymatous nephritis.....	154
chorea in a horse.....	244
Liver, cystic diseases of, in a pig.....	313
Loss of cud.....	181
Lovell, R.—fracture of os suffraginis.....	313
traumatic or idiopathic tetanus.....	151
Lowe, William Herbert.—cases.....	315

Male fern.....	173
Maternal impressions.....	329
McLellan, E. A.—Lameness.....	215, 298
Multiple comminuted fracture of the sesamoid bones..	241
Abortion epizootic cellulitis.....	237
Medicine as practised by animals.....	176
Meningitis, spinal.....	239
Menstruation, comparative physiology of.....	310, 284
Milk sickness.....	117
Misnomer explained, a.....	256
Mitchell Hubbard W.—Causes of change in animal forms.....	19
Atavism.....	118
Monkeys, diseases of.....	331
Montreal Veterinary College.....	167
Moore, William Oliver.—Keratitis in a dog.....	242
Some diseases of the eye in lower animals..	31, 199
Ingrowing eyelashes.....	236
Moor tops for stable bedding.....	331
Navin, John N.—Atavism and reproduction.....	36
Nephritis, acute parenchymatous.....	154
Nervous diseases of pachyderms.....	75
Nervous system of our domestic animals, recent contributions to the physiology of.....	101
Newman, Dr.—Novel way of removing a foreign body from the oesophagus.	237
News and Miscellany.....	81, 180, 254, 236
Obituary.....	67, 166, 247, 371
O'Leary, Cornelius M.—The extent to which animal forms undergo change.....	94
Oleum Gaultheria—oil of wintergreen.....	128
Orang-outang in London.....	326
Os pedis, removal of.....	315
Osseous deformities in the lower animals.....	173
Osler, William.—Extensive cystic disease in the pig.....	313
Ostrich breeding.....	81
Ostriches, diseases and accidents among.....	74
Parasites in American pork.....	254
stock.....	83
Parasiticide, a new.....	320
Parmly, Ehrick.—Abortion in cows.....	109
Pasteur, tribute to.....	326
and Koch.....	174
on rabies.....	176
Penis, amputation of.....	320
Pepsin of sheep, the.....	73
Personal.....	226

Pets, domestic, and skin disease.....	55
Philadelphia veterinarians and dishonest druggists.....	81
Physical diagnosis.....	11, 205, 275
Phthisis conveyed from dogs to man.....	180
Pigs, overfed.....	82
Pilocarpin, the action of, upon Horses.....	56
Pleuro-pneumonia contagiosa.....	243
Pneumothorax in a coal.....	321
Poisoning by arsenic.....	82
blood, in the lower vertebrates.....	329
Poll-evil, treatment of.....	323
Porter, William Henry, acute parenchymatous degeneration of the kidneys.....	87
Poultry, a good medicine for.....	73
Presentation.....	254, 259
Prophylactic Vaccine for "Rouget".....	175
Quarantine stations, cattle.....	83
Quarantine, the New York cattle.....	308
Quitters, Treatment of.....	323
Rabies, incubation of, in dogs.....	75
Rabies, recovery from.....	76
Ramsdell, E. Benjamin, M.D.—Physical Diagnosis.....	11, 205, 275
Rary system, improvement on the.....	262
Ration of hay for horse.....	81
Red water in cattle.....	255
Reports of Commencements and Societies.....	142, 231
Reviews.....	65, 165, 245, 318
Robertson, Dr.—Simple Lameness.....	240
Case of Jaundice.....	240
Rutherford, James.—Idiopathic tetanus.....	152
Sanders' Mission.....	230, 309
Sarcoma in a common fowl.....	321
Scabies from sarcoptes canis, incipient stages of.....	239
Scarlatina among horses.....	250
Sheep fluke.....	171
Shoeing a kicking horse or mule.....	327
Small-pox in birds.....	180
Snake, hibernating, examination of.....	253
Stereoscope in the study of anatomy.....	332
Stickler, Joseph W., M.D.—Incipient stages of scabies from sarcoptes canis supra-public cystomy.....	213
Stomach digestion in the horse.....	53
Strychnine poisoning in a dog.....	235
Sulphur, use of.....	235
Swine plague.....	171
Syphilitic, inoculation immunity of animals, from.....	252

Tail, rubbing the.....	331
Teeth of the horse and their diseases.....	121
Test for iodoform.....	172
Tetanus idiopathic.....	61, 152
or traumatic	151
Tintura iodoformi comp.....	172
Townsend, N. S., M.D.—Milk sickness.....	117
Transmission of tubercle from the human species to the domestic cat...	249
Treasury cattle commission, report of.....	181
Trichiasis—ingrowing eyelashes.....	236
Trichina.....	261
cold kills	180
Trichinosis from eating horse flesh.....	327
Tsetse fly.....	81
Tubercle—bacillus in hens.....	310
Tuberculosis and hydrothorax in a female rhinoceros.....	249
Tumor cerebral.....	262
Tumors, recurring cystic of the supra-scapular region.....	157
Tympanitis terminating in rupture of stomach.....	315
Typhoid fever among live stock.....	84
Vaccination.....	260
Venom copperhead.....	260
Veterinarians, more needed.....	256
specimen.....	85
Veterinary Association, Ontario.....	147
State.....	311
College, American.....	145
Columbia.....	229
annual commencement of.....	142
North Western.....	81
Ontario.....	231
one stool.....	139
Colleges, English, and their graduates.....	50
in New York city, the legal status of.....	52
Congress international.....	83
Convention, Illinois State.....	259
hospital.....	258
journal, a Western.....	139
medical schools, Berlin.....	81
news, English.....	80
profession at large, to the.....	140
school, Harvard.....	212
new.....	180
society, Ontario.....	181
societies.....	50
surgeons, State Convention of, in Chicago.....	233
number of, in this country.....	180
U. S. and the B. C. V. S.....	307

Victims to wolves	326
Villous membrane of stomach, thickening of	325
Virchows health, Professor	254
Virus, equine scarlatinal as a prophylactic against human scarlatina. . .	174
Vivisection question, the	182
Walley, Thomas, contraction of the foot in the horse	273
Walton, Frank V., acute parenchymatous degeneration of the kidneys	
in a mare	156
adenoma of the breast in a dog	59
fracture of the internal metatarsal	162
fracture of the os inorninata	164
hamaturia associated with nephritis	161
intestinal calculus lodged in colon	160
intestinal calculus from a horse	242
Wiltshire, Alfred.—The comparative physiology of menstruation	284
Windolph, J. S.—Chronic rheumatism, arthritis with osteo-phatic out-	
growths occurring in a young ox	163
What is cruelty to a cat?	82
What shall he do with them?	328
Wound, penetrating, of abdomen—recovery	159

THE JOURNAL

OF

COMPARATIVE MEDICINE AND SURGERY.

VOL. IV.

JANUARY, 1883.

No. 1.

ORIGINAL COMMUNICATIONS.

ART. I.—LATENT GLANDERS IN THE HORSE ILLUSTRATED BY THREE CASES.

BY G. W. BOWLER, M.D.V.S.

THE following cases of Glanders will serve to show the length of time the disease may be dormant in the system without giving much outward sign of its presence, and how particular the veterinarian requires to be on making an examination of horses supposed to be affected with Glanders or Chronic Gleet. The first of the cases I have undertaken to report for your JOURNAL was that of a bay gelding, aged, a very fast pacer, owned by a livery stable keeper in Newport, Kentucky. From such information as I could derive in reference to the case it appears that the horse in question had been sick for some months past, and as the owner informed me, had been treated for some imaginary disease of the kidneys, but instead of improving under the treatment had become much worse.

At the time I was called upon to see the horse, the owner

stated that he wished me to make an examination in order to discover the true character of the disease with which he was affected; consequently I gave him a very careful examination.

I found the animal in very poor condition; being low in flesh, an unhealthy appearance of the hair, legs slightly swollen, slight muco purulent discharge from left nostril, some enlargement of left submaxillary gland, which was partly attached to submaxillary bone; whilst the Schneiderian membrane displayed several ugly chancrous ulcers. After this examination I did not hesitate in pronouncing it a case of Chronic Glanders and ordered the animal destroyed, which the owner promised to have done.

I left the stable and scarcely even gave the case a second thought until about twelve months had elapsed, when being called upon to see a patient in Covington, Kentucky, my attention was called to a bay gelding being led to halter, and which had the appearance of a fine, healthy animal. The owner addressed me as follows: "Hello, Doctor! Do you know this horse?" I answered, "no." "Well," said he, "this is the pacing horse, Sam, you pronounced glandered about a year ago." "Indeed," said I, "is that so?" "Yes," said he. "You were slightly mistaken that time, wer'nt you?" I went up to the horse and again examined him, and found it was the same horse I had been called to see a year previous. I answered, "no; I was not mistaken. This horse was glandered when I examined him a year ago and he is a glandered horse to-day." On making this reply he set up a loud laugh at my supposed ignorance, and I left for home wondering at the strangeness of the case.

About two months after this conversation had taken place, I was informed by a gentleman who was present at the time I speak of, that he would like me to come at once and see the horse in question, as the owner was about to have him destroyed. I at once repaired to the stable in which I had before seen him. And what a change had taken place in that short time. Instead of the sleek-haired fine looking horse he before appeared to be, I now found him poor in flesh, with the old discharge from the nostril, the Schneiderian membrane thickened and ulcerated, the body in most parts filled with

farcy buds, many of which were discharging, and which gave the animal a most loathsome appearance. I asked the owner if he was now satisfied that my diagnosis was a correct one? He said that he was now well satisfied that such was the case, but that he never would have believed it had he not seen it. The animal was now taken to the commons and shot. Thus we find that in this case the animal had made an apparent recovery, but that the disease had lain dormant in the system for about fourteen months before it again broke forth in its most malignant form.

The next case I shall record was that of a chestnut colt rising five years old, the property of a well known gentlemen in this city, the owner of the celebrated three mile mare, "Black Maria."

This colt was a very promising trotter, his owner having refused \$1,000 for him as a three year old, and at the time he was first supposed to be affected with glanders, was about a month after he had recovered from a severe attack of typhoid pneumonia. I was then called in to see him again on account of a slight swelling of the left submaxillary gland supposed to be the result of a cold, but, as the proprietor of the stable had that morning noticed a drop or two of blood issuing from the nostril, he thought it might be more serious than he had supposed. On examination I found the left submaxillary gland considerably tumefied, slight discharge from the nostril and on the membrane I detected two ulcers, while on the back was a farcy bud, and one on the neck. I at once pronounced it a case of glanders and so informed the owner, but instead of having the colt destroyed he insisted on my treating him by way of experiment, to which I at last consented. A stable for the purpose was obtained, and the colt placed in it so that he was entirely isolated from any other stock. I kept him under treatment for six weeks, by which time the ulcers had healed, the discharge ceased, and further than the appearance of the cicatrix where the ulcers had been, nothing appeared to be the matter with the colt. I now turned him over to the owner, but cautioned him that the disease was at any time liable to break out again; he therefore concluded to give him a run on grass where he could do no harm. Just at

this time a dealer came along having a black pacing horse he was desirous of selling, and on seeing the colt, which he felt certain had been suffering from an attack of distemper only, offered to trade. An exchange was accordingly made, the owner giving colt, harness, blankets, halters and everything he had previously worn, for the black pacer, and the dealer taking all further responsibilities. In three weeks from this time the chestnut colt was offered for sale at the public stables. He appeared to be in splendid health, and as the auctioneer stated his pedigree, etc., he also, in a sarcastic tone, informed the audience that I had some time ago pronounced him glandered, but that he was no more glandered than he himself. Instead, however, of its having the effect he expected, it had an entirely different result—as not a single offer was made for him and he was returned to the stable. On the following day a gentleman who makes some pretensions to veterinary science and trading in horses purchased him for \$150, and a few days afterward drove him up to my office, in a light trotting wagon. He then asked me if it was true that I had pronounced the colt glandered? I told him it was. When he remarked, "Well, I cannot see anything the matter with him." I responded, "Perhaps not, but I can." This ended our interview.

In about a month afterwards the gentleman sold the colt to a prominent dealer in this city, who kept him for eight months when one day his first owner happened to pass through the stable and recognizing him, censured his present owner for keeping the colt amongst the other horses after what had been said. To this the gentleman replied that he didn't want any advice on the subject, as he knew very well that there never had been any glanders about the colt. A few more words passed between them and nothing further was said until two months afterwards when the disease again made its appearance in a most loathsome form, compelling the present owner to return him to his previous one, who had the satisfaction of seeing him destroyed after passing through the hands of three dealers, each of whom considered himself an expert in detecting such diseases.

The third and very important case, was that of the celebrated trotting mare *Proteine*, whose record almost approached

that of the Queen of the Turf, "Maud S." She was owned in Cincinnati and well known in sporting circles.

This valuable mare was first noticed to be wrong, about the beginning of September, 1880. She was then stabled at Chester Park, and commenced to discharge from the left nostril, but it was generally supposed to be a slight cold as she had for some time been rather off her feed. I was called to see her about the 8th of September, when I found her discharging freely from the left nostril, the discharged matter was of a mixed colour and very sticky as it had adhered all the way round the nasal passage which at once excited my suspicions of the case. On proceeding with my examination I discovered two or three chancrous ulcers on the Schneiderian membrane, the left submaxillary gland was considerably tumefied, but not attached to the submaxillary bone, and the general appearance of the mare was not that of an animal in good condition. I informed the owners of my suspicions that the mare was glandered, but it was agreed that I make another examination in the course of a week.

When I next examined her, I proposed to have the mare locked up during the night so that no one could go near her, and that I might see her before her nostrils had been cleansed, which was done.

On this examination I found the discharge from the left nostril much as I found it before, with the exception that it was streaked with blood, and the ulceration had considerably increased and descended. There was no swelling of the legs, or farcy buds on the body. But I was satisfied the mare was glandered, and she was removed during the night and taken to Kentucky.

On account of the celebrity and value of the mare, I proposed to the owners that we demonstrate to their entire satisfaction, by inoculation, that the mare was glandered. This was agreed to by both parties, and I accordingly made the necessary preparations, one of which was the purchase of a horse to carry out the test.

Just as these arrangements had been completed, one of the owners of the mare refused to have the operation performed, as a stable keeper (one of those men to be found in every

community who is always ready to cure everything that is incurable) made his appearance and assured the owner that he would cure the mare for a stipulated sum. He now took charge of her and commenced the usual treatment of injecting the nostrils, etc., and at the same time she was allowed to run in a paddock adjoining a pasture in which was another horse owned by a lady in this city. This state of affairs continued for some months, and the mare was pronounced *nearly* cured when all at once the horse in the adjoining pasture commenced swelling in the legs, and, a veterinarian being called in he pronounced the animal suffering from farcy and glanders, and the horse was killed by his orders. The owners of the mare now informed me they were agreed to have the inoculation test, and I was again preparing for it when the same owner upset the business by listening to a number of illiterate persons, I therefore concluded to have nothing further to do with the mare, but to let matters take their own course. A year had now elapsed, since I first saw the mare, when I was informed that she was entirely well and was going into training at once.

She was accordingly brought over to Cincinnati from Kentucky, and all the prominent horsemen, together with two Veterinarians, (one of whom never ceases informing the public that he is an M. R. C. V. S. L. and hangs his diploma in the office of a livery stable in every city or town he visits) were invited to be present. About fifty persons examined the mare and pronounced her all right, as she looked tolerably well, was fleshier than usual, and had altogether ceased discharging from the nostril.

The Veterinarians (?) stated that she had suffered from nasal gleet, but was entirely well. In consequence of this exhibition, a paragraph appeared in the next morning's paper, stating what had occurred, also remarking that a certain Veterinarian (of course referring to me) had pronounced her glandered, but that such was not the case, as the worthies I have before made mention of had entirely cured her, and that the mare now bid fair to be the competitor of Maud S.

On the following day, Mr. Wolfstain, one of the owners, and the gentleman who had always placed confidence in my diag-

nosis' of the case, met me on the street and wished to know my opinion of the mare since the appearance of the paragraph in the daily paper. I stated to him that notwithstanding all that had been said and printed, I had not up to the present time had the slightest occasion to change my opinion of the case. Mr. W. then went to see his partner, and disposed of his interest in the mare for, \$1,000.

She was now placed in the hands of a trainer at Piqua, Ohio, who commenced driving her, but found she had no endurance. She was then taken out of his hands and it was decided to make a brood mare of her. She was accordingly sent to the Alexander Stud Farm, Kentucky, and there put to one of the stallions. She was also to remain at this place until she foaled. However, a few weeks only had elapsed before the owner received a dispatch from the Farm, to remove the mare from there at once, and she was consequently returned home the next or same day. It was now concluded to drive her on the road, which was done for a long time until she was WELL. It must be remembered, however, that for some time back the old discharge had made its appearance again.

Mr. Bair, the driver of Maud S, now concluded to take the mare, and place her in the stall previously occupied by Maud S, and it was given out that he was going to beat the time of the celebrated Maud S with this mare. *She is the great comet of the future*, etc., etc.

After Mr. Bair, had been driving the mare for some time, he concluded to give her up, finding that she had neither speed nor endurance. From this time forth she gradually declined. The nasal discharge was ever present, also the enlarged sub-maxillary gland, and in the glutinous discharge small particles of tuberculous matter could readily be distinguished. This state of affairs continued until the mare had been suffering for nearly two years when she was found to be dying from obstruction of the air passages, and it was at last decided to destroy her. Another convincing proof of her condition ought to have been sufficient for even those who would not allow themselves to believe the mare was glandered, when it was known that a Hambletonian colt owned by the groom having charge of the mare, and who had always kept him with her to show that she

was all right, eventually became affected in like manner with her and died from a most loathsome attack of glanders. So much so that it was considered necessary to burn down the stable in which he had been confined in order to get rid of the disease.

ART. II.—ARE THERE PHYSIOLOGICAL AFFINITIES IN THE BLOOD OF EACH BREED OF ANIMALS?

BY ALLEN S. HEATH, M.D.,

*Professor of Cattle Practice Columbia Veterinary College, President of
Farmers' Club, etc.*

THE quality of blood has so much to do in the peculiar characteristics of the several breeds of animals, that I am at a loss otherwise to account for the potential influences of breed, unless there are active affinities in the blood.

The Holstein breed of cattle has its own peculiar physiological characteristics. The prominent features of this breed are: size, black and white color, large milk production, large digestive apparatus, short inturned horns, round bodies, and roundness of the bones of the limbs. These characters are so marked that even half-breeds, quarter-bloods, or those grades of only one-eighth blood, show these characters. How could this be but for the affinities for each other of the globules of Holstein blood?

Grades crossed upon grades of opposite characters show none of these affinities, nor predispositions.

Can the long breeding for a special purpose so impress the blood globules and the vital forces, that all of the minutest functions of the physical organisms shall be perpetuated in breeds, like copies of photographs by the artist, though the last likeness taken shall be a copy of the succeeding ones? These are reproductions of pictures with no variations; while

animal reproductions must show that the originals have been modified by tints, shadings, and modifications of form and figure, however slight.

If at every dilution of blood, as in grades, no vital affinities be maintained in the blood, why the appearance of these characteristics even down to the tenth dilution on the "pure-bred," "thoroughbred" animals? There is no such thing as *pure blood* in domestic animals. The "thoroughbred" race-horse is only relatively pure-blooded. The dilution of cold blood has become extremely attenuated, and unlike the *homœopathic dilution*, it weakens at every dilution.

The consummation of the sexual act imports to the offspring of that union one individual of a dual character equally imported by each parent. This complex-animal essence—call it by whatsoever name you please—is possessed of a formative power which develops two individualities in one. But for this, *pedigree* would be as meaningless as *prepotency*. Of course, I speak of the latter term as too often used to convey a false problem in the physiology of animal life. According to many advertisements, prepotency means that the advertised males possess the *impossible powers* to transmit their own characteristics exclusively without those of the female in any way interfering. If this is so, why use other agencies than the marvelously prepotent male? Prepotency rather means that affinity of blood, vitality of breed, which reproduces itself, its characters, its breed, from long-fixed characters, despite the divergent characteristics of the female, though modified by her.

If there are no accumulations of blood affinities when distant strains of blood reunite, why did the horses of the Messenger blood trot faster as Messenger blood accumulated in their veins? Or why did the accumulations of kindred blood tell in Bonnie Scotland and his descendants, though even of remote ancestry? It was the concentration, or accumulation, of Messenger blood in the Hambletonians and other trotters, that put *physical power* and *will power*, and smooth and rapid strides, that made the trotting of a mile possible in 2:10½ by the modern trotter.

Mr. Cole, of Solsville, Madison County, N. Y., purchased an imported cow in calf some twenty-eight or thirty years ago. The

calf proved to be a male. These he in-bred with their descendants all this time. The breed was the Holderness. For a time the stock were red and white in color. Every generation grew darker red, until after a time the calves were born apparently black and white; but the red kept growing darker and darker until finally his valuable herd became permanently black and white. Let us realize the Holderness breed to see of what it is composed. The old red Durham, and the black and white Holstein furnished the blood. But Mr. Cole's original cow and calf, one or both, possessed a slight excess of Holstein blood, that took a long time to accumulate, so as to assert its characteristics. Not only has it done this in color, but it has also done it in form and milking qualities. The effect of the in and in-breeding is sure in firing the bones, and somewhat diminishing the size. The American Holderness has acquired such affinity of blood characteristics, that Mr. Cole deserves the credit of having originated a breed.

The American Shorthorns have been perfected and made superior to their foreign ancestors by the accumulations of the blood of the best strains of remote ancestry. There seems to be, not only affinities of consanguinity, but affinities of the refinements and of the superlative excellencies of breed strains as they commingle in modern breeding. This broad field of investigation has not yet been fully explored.

If my queries excite any useful thought and something instructive from some one proves more clear, I shall strive to profit by it in any future communication to the JOURNAL.

ART. III.—PHYSICAL DIAGNOSIS.*

BY E. BENJAMIN RAMSDELL, M.D.,

*Lecturer on Diseases of the Respiratory Apparatus, Columbia
Veterinary College.*

TO-DAY we commence the study of diseases of the Respiratory Apparatus. We shall divide our subject into two parts, and during the earlier portion of this course we will devote the hour to Physical Diagnosis; while later on the diseases proper of the lungs and accessory apparatus will be considered.

Physical diagnosis has been defined as “those methods which are employed for detecting disease during life, by the anatomical changes which it has produced.”

While the treatment of diseased conditions is the grand object of the physician, still the *diagnosis* of the same must precede the treatment, and therefore is really the more important; for although diagnosis without treatment may have a cure, yet treatment without diagnosis is almost certain to do injury to the suffering animal.

The diagnostician must understand pathology—that is, he must be thoroughly conversant with all the changes which may take place in an organ under the baneful influences of disease. In order to do this he must have a clear conception of the structure and the various functions of the organs under consideration, and therefore must be an anatomist and a physiologist. Remember that in our conflict with disease there are the two important parts of the fight: first, the detection, or diagnosis; and secondly, the correction, or treatment. Observe, I put the detection first, not only on account of the logical, but also on account of its inherent importance.

No one can without fear and timidity, treat cases of whose diagnosis he is ignorant. I do not wish to enter into a scholastic discussion, but I would say that any medical school or

*Abstract of a Lecture recently delivered at Columbia Veterinary College.

system which inculcates the *treatment of symptoms* and ignores the knowledge of the disease itself, is founded not upon a rock, but on sand, and will not be able to withstand the waves of time which will roll about and wash away its insecure foundation.

Diagnosis, then, is the scientific consideration of symptoms. Watson has defined a symptom as "everything or circumstance happening in the body of a sick individual and capable of being perceived by himself or others, which can be made to assist our judgment concerning the seat, or nature of the disease, its probable course and termination, or its proper treatment.

A more laconic answer would be that *symptoms* are the *signs of the disease*. They are important not per se, but only when scientifically considered by a skillful physician.

Just to illustrate the difference between the trained and the untrained observer, I have seen a patient, whose eye had previously been declared unsound, taken before a class of first-course students, men of possibly more than ordinary intelligence. After inspection they were unable to find any trouble in it, and although it was *artificial* none discovered it.

There are two classes of symptoms: first, those which are appreciated and noticed by the patient only; e. g. pain, dyspnoea, etc.; secondly, those which are apprehended by the physician; e. g. rapid pulse, increased temperature, rapid respiration, cough, etc., etc.

The first class has been named the subjective, whereas those observed by the physician have been called the objective symptoms.

In the examination of the dumb animals none but the objective symptoms can be considered. Our diagnosis therefore is dependent upon the careful consideration of these objective symptoms.

Under the general term, physical diagnosis, we have seven methods which we employ in our search: First, Inspection; second, Palpation; third, Percussion; fourth, Auscultation; fifth, Auscultatory Percussion; sixth, Mensuration, and seventh, Succussion. These are named in the order in which they should be employed in the diseases of the Respiratory Apparatus; and to them I would add, as an important aid,

examination of the urine, physically, chemically and microscopically.

The first named method, Inspection, is simply the ocular examination of our subject.

By it we appreciate the attitude, the general condition, the number and rhythm of the respiratory acts, etc.

The respiratory act, as you well know, is divided into an inspiration followed immediately by an expiration; and then occurs a period of rest. We first count the number of these respiratory acts per minute. In the horse there are normally twelve to fifteen such respiratory movements per minute.

Many causes may produce an increase in their frequency, and the mere increase in the number of these acts is of little value. It is like a symbol from the alphabet, which by itself is worthless; but when associated and conjoined properly with others of its kind, it goes to make up a word, which is the expression of an idea; the grand object of the writing. So with one symptom, by itself of little value, but grouped with other symptoms, it forms the chain of thought which expresses the diagnosis, the grand object of our search.

All diseases of the respiratory apparatus, which tend to diminish the aerating surface either organically or functionally, will produce a corresponding increase in the number of the respiratory movements, according to the extent of the disease. Exercise, fever, local inflammation, etc., will have this same effect.

In order to appreciate the respiratory effort we must get the simplest idea of the thorax.

The equine thorax is like a box, bounded superiorly by the eighteen dorsal vertebræ; laterally, by the eighteen ribs (on each side) and the interspaces filled by the intercostal muscles; inferiorly, by the sternum; posteriorly, by the diaphragm; and anteriorly by the important vessels, the œsophagus, the lymphatic glands and the trachea. Roughly speaking, this is a box which has but one entrance, and that is through the trachea.

As you look at the healthy thorax during inspiration you notice a slight movement of the ribs outward and forward.

The anterior ribs move least; in fact, the first rib does not move any; the second rib has a slight movement; the third

moves more, and so on, the amplitude of their movements increasing up to the ninth, which is most movable. The motion then diminishes gradually to the eighteenth rib.

In your examination you notice first that there is movement of the ribs or chest wall, then whether these movements are full or shallow, and thirdly, whether one side moves more or less freely than its fellow.

In some cases you will be compelled to carefully observe whether the diaphragm does most of the work, or whether the ribs do their share or not.

We notice in a given case a decided diminution, or even a total loss, of motion of one side of the chest. What may produce this? What are the conditions which will cause such a pronounced symptom? First, *Pleurodynia*, a rheumatic affection of the intercostal muscles, may cause it; but the prominent cause is a spot of inflammation on the surface of that delicate serous membrane, the *Pleura*. This membrane, as you know, is a closed sac with its two surfaces, the visceral layer covering the lung and the parietal layer spread over the chest wall, lying in contact one with the other.

In health during an expansion of the chest cavity with a consequent distention of the lungs the two surfaces of this delicate layer play upon one another without causing any sensation whatever. As soon, however, as inflammation begins, no matter from what cause, whether intrinsic or extrinsic, we have immediately following the congestion of the part a desquamation, or falling off, of the endothelial cells, the protecting layer which covers the plexuses of sensitive nerves and distended blood vessels which constitute an important layer of the pleura. This is the first stage of *Pleurisy*. The exposure to friction, during the respiratory movements of these delicate nerve fibres which are already suffering from the pressure of distended capillaries, gives intense and instantaneous pain. This the animal avoids or diminishes by favoring that side, by holding the chest wall quiet and thus preventing the rubbing of this sensitive surface, which would otherwise be exceedingly painful. The animal will in many cases attract your attention by *pointing* repeatedly to the painful spot. Consequent upon diminished movement of this affected side the lung can do but

little work, and its fellow must act vicariously and thus do double duty. As a result we have increased movement of the healthy side.

In certain forms of Subacute Pleurisy, such as the variety called "Pleurisy with Effusion," we have exuding from the vessels a quantity of serum which falls down to the lower portion of the pleural cavity, separating in this way the two layers, parietal and visceral, of the pleura.

If the amount of effused serum be considerable we will notice on inspection besides loss of motion, a decided bulging of that side. If the fluid be great enough to compress the lung, that is, occupy a space formerly filled by lung tissue which can now collapse, we may notice a decided swelling out of the affected side, with widening of the intercostal spaces and bulging of the same, with displacement of adjoining viscera.

In cases of Laryngeal, or Tracheal disease with obstruction to the entrance of air to the lungs, you will notice with every inspiratory effort a sinking in of the antero-sternal space, a hollowing of the intercostal spaces and marked retraction of the abdominal wall.

The second method employed in Diagnosis is Palpation. This is simply the act of laying on the hand and feeling the external surface of the body. It has a wider range than Inspection. It brings us nearer our patient and is more useful in determining the amount of local expansion; and the character of vibrations or impulses communicated to the external surface.

In certain cases of Acute Pleurisy, where we have the delicate smooth surface changed to a roughened one, as I briefly described a few moments ago, the movements of the lung although slight, still allow during inspiration, a rubbing of this surface. When we place our hand over this spot we feel a peculiar sensation communicated to it during the inspiratory act, called the friction fremitus. It can only be appreciated in the first stage of pleurisy before the surface has been protected by the plastic exudation, nature's process of recuperation.

Again, if in a case of pleurisy you make firm pressure in the

intercostal space over the seat of the inflammatory process, the animal will wince, grunt, or even groan.

Under this heading we must also consider those results of palpation obtained by feeling the pulsation of the arteries.

The pulse is best examined in the horse by feeling the sub-maxillary artery on the inner surface of the lower jaw, while in the dog and cat the crural artery on the inner side of the thigh will be easiest found.

The natural pulse of the horse after a period of rest beats about forty times a minute; that of the cow from forty to fifty; and the pulse of the dog ranges from eighty to one hundred, depending upon the size and breed of the animal. The pulse of the sheep ranges from seventy to eighty per minute.

What is the pulse? How is it produced?

By a contraction of the left ventricle of the heart a volume of blood is forced out into the first portion of the aorta. You all no doubt have learned the mechanism of the pulse from the lectures of your esteemed Professor of Physiology, and I only wish in a few words to bring the subject once more to your attention. As the aorta receives its new complement of blood it becomes distended; but on account of its elasticity, immediately following this distension there comes a contraction. This dilatation with its accompanying contraction is propagated in a wave which passes all along the whole arterial tree through its minutest subdivisions.

While the wave passes instantaneously along the vessels, the blood requires an appreciable space of time for its transmission.

The impulse communicated to our finger then is synchronous, that is, it occurs at the same time, with the contraction of the left ventricle.

This is sometimes of great assistance in our examinations of the heart. In certain diseased conditions it is difficult to determine which is the systolic or first sound. If we recollect the fact just stated we will place the finger on an artery and that cardiac sound which is synchronous with the pulse, must be the systolic sound.

The pulse has been the subject of much study, but it was

not until the celebrated Marey invented the sphygmograph, that our knowledge of its physiological character was very definite. * * * * *

By those who would carefully study the pulse in its relation to disease, six important characteristics will be observed. These are; first, the force; second, the frequency; third, the rythm; fourth, the size; fifth, the quality; and sixth, the duration.

This division with the several characteristics may seem like an extra refinement to those of you who have never considered the pulse except in regard to its frequency; but we think there are none here, who can not, if they are observant and persevering, in a short time appreciate these apparently fine shades of distinction.

How may one pulse differ from another?

In all these points? Yes. That is one pulse may be strong, may beat forcibly upon the finger, and another may be weak and feel but feeble beneath our touch. One pulse may be rapid or frequent as it is called, and another may be slow or infrequent. One may be regular, another irregular or intermitting. By regular we mean the same number and kind of beats to the minute.

An intermitting pulse is one in which we skip a beat now and again; some times this loss of a beat is regular, that is, it occurs every five, ten, or other number of pulsations, or is irregular. One pulse may be large, another may seem quite small.

One may feel hard like a cord beneath the finger, another may be so soft we can compress it and with a little pressure prevent the pulsation in the vessel beyond.

Last of all we may notice that one pulse seems to delay and last longer beneath the finger, than another which appears to depart as quickly as it came.

So we have strong or weak pulses, rapid or slow pulses, those which are regular, irregular, or intermitting, large or small pulses, hard or soft pulses, and finally, long or short pulses.

These terms are as you see only comparative.

We consider the pulse which is noticed after exercise in health as our standard and it possesses the following qualities.

Physical Diagnosis.

It is a strong, frequent, regular, large, medium hard, and long pulse.

A typical case of Pneumonia is accompanied by a strong, frequent, regular, large, soft, and short pulse.

Inflammations of serous membranes and notably of the peritoneum are associated usually by a pulse which is strong, frequent, regular, small, hard and short. This has been called a cordy, or wiry pulse.

Anaemia due to recent profuse hemorrhages has frequently a weak, frequent, regular, large, very soft, and short pulse. This has been called a gaseous pulse; because it gives you the sensation of a bubble of gas passing beneath the finger.

Acute Laminitis is associated with a strong, frequent, regular, large, hard, and long pulse.

In hypertrophy of the left ventricle of the heart we frequently find a pulse which is strong, infrequent, regular, large, hard, and long.

* * * * *

Observe how each of the conditions above mentioned has a pulse which possesses distinctive features, which are not matters of theory only; for you will be able to appreciate their importance as you see more and more of it verified by your experience.

Intermission of the pulse may occur as the result of indigestion; and without other symptoms it is not important. Animals with this kind of a pulse do not usually stand diseases well.*

*Williams.



ART. IV.—CAUSES OF CHANGE IN ANIMAL FORMS.

BY HUBBARD W. MITCHELL, M.D.

Professor of Comparative Anatomy in the Columbia Veterinary College.

IN those early geological ages when our globe was enveloped by a universal ocean it is not probable that any form of life existed beneath the surface of the sea. That long age, beginning at the very moment when our planet was thrown off by a stupendous chemical process from the central mass of incandescent gas, or sun, and continuing through inconceivable years during the slowly cooling and super-crusting of the earth, down to the time when it became cool enough to allow the waters to rest upon its surface, was called the Archœan Age, or Azoic Age, and was indeed the Beginning, or an age or epoch without life.

The first dry land that reared its head above this wide, shoreless and lifeless sea was at the Lower Silurian Age. It was a long line of low hills, commencing on the northeast at Labrador, extending southerly and westerly to the region of upper New York and the Great Lakes, then bending to the northwest and stretching away to the Arctic ocean. This bow-shaped strip of land has been named the Laurentian Hills, from the fact of its lying partly along the border of the St. Lawrence River and Gulf.

It formed a great barrier that divided a limitless expanse of waters into a northern and southern ocean. This early uplift of land has remained quiet and stable through all subsequent ages—ages that have witnessed the most tremendous convulsions of nature—the successive risings and sinkings of continental areas, the mighty upheavals of vast mountain chains, the fearful bendings, and foldings, and distortions of the earth's crust, down to our own times.

That early Silurian beach was wide-stretching and desolate, and silent. In its earliest dawn it was devoid of life. Climates did not exist, a temperature nearly uniform encompassed the earth. Deluging rains fell upon it, but the thick atmosphere, heavily laden with carbonic acid gas, was nearly quiescent.

Life under such conditions was almost impossible. Only the very lowest forms—if even these—could exist. When did life first appear on the earth, and how did it first appear?

Fossil remains of a very low order tell us that it appeared *sometime* during this lower Silurian age, sometime after the first uprising of the Laurentian Hills. But as to *how* it appeared is another and more difficult question. It is a question, however, that will force itself upon our minds, and thoughtful men earnestly strive to find an answer to it. As science pushes its remorseless and searching inquiries farther and farther, new forms of life are discovered, each simpler in construction and plan than the preceding forms until the simplest of all has been found, namely—a single cell. The line seems almost complete from, beginning almost anywhere in the animated scale, the Protozoans, the Sponges, the Algæ, and the multitude of systemless animals, composed of a few cells, down to an animal composed of one.

It is the now generally received opinion among scientific men that the cell was the first form of life that appeared on the earth, and that all subsequent forms have been modified from it. But where did the first cell come from and of what is it composed.

Chemists tell us that a single atom of oxygen gas has the power to attract to itself two atoms of hydrogen gas, and the union of these three atoms of gas form water, a substance totally different from the two impalpable gases that compose it. And if a single atom of nitrogen gas be united to five atoms of oxygen gas we have a strange substance as a result, namely—Nitric Acid, N. O.

If we take a certain number of atoms of C. H. O. and unite them we have cane sugar; by varying the number of atoms of each we can form a long list of totally dissimilar substances.

Four atoms of carbon united with five of hydrogen give us an important substance, a compound radical called Ethyl, which is thus expressed C⁴ H⁵.

If to this compound a single atom of oxygen be added we have Ether C⁴ H⁵ O. By adding to this H. O., a single atom of each we have the well known substance alcohol—C⁴ H⁶ O².

The addition of nitrogen in varying proportions, to C. H. O.

in varying proportions, gives us a long array of strange and curious and interesting bodies well known to organic chemistry.

This aptitude that certain atoms have to combine with certain other atoms to produce these strange compounds is called chemical affinity. It is a subtle power, absolute in its operation, that causes simple atoms to rush together and arrange themselves in such a way as to make new and unlike substances possessing properties entirely distinct from the original elements.

Knowing then that this law of chemical affinity exists, that by its operation simple elements unite to form complex bodies with *higher powers* we are led to inquire if the *simple cell* may not have been formed by the process of some such law, and received its powers of growth and multiplication by what may be called *chemical force*.

Bearing this query in view, I will venture to offer the following theory :

A given number of atoms of C. H. N. O. combine and arrange themselves in such a way as to form a minute mass of a jelly-like substance (which has already received the name of Protoplasm.) This mass, floating on or in the water, gradually acquires the power to attract to itself simpler elements which it appropriates and uses as food. Through this power to assimilate food it acquires another, that of dividing and multiplying itself so as to form other masses.

These masses may be called cells.

Cells thus formed by the chemical union of simple elements and acquiring the power of *receiving food* and of *multiplication* and *growth*, also acquire a peculiar *vitality* enabling them to exist by themselves, of increasing in numbers, of attracting other cells to them to form bodies of a higher, more complex, and gradually of a more special organization. This vitality may be called the Life of the Cell, resulting from chemical force.

Our cell, then, formed by a chemical law of affinity and assuming new and complex powers of a vital character, becomes a being, having an independent existence and capable of maintaining itself in a congenial habitat. This habitat it finds in the primitive seas that bathed the early quiescent, silurian

beach. This cell, thus endowed with a vital force which we call life, becomes a nucleus, around which cluster other cells to produce those first simple forms of life, beginning with the few celled protozoan and continuing on through the long line of animated beings up to man.

If our theory is correct, that the cell acquired its vitality or life through chemical force, the first step is made plain, and we can now go on and follow the law of evolution from the first dawn of life upon the earth through all its manifold and successive changes, tracing step by step living forms as they proceed to a higher and still higher form until we reach that level upon which we ourselves stand in the full enjoyment of a completely developed organization animated and controlled by a perfect brain. Assuming that cell-life began in the way we have indicated, how does it multiply and grow to produce others like itself. Fig. 1 shows the process of fission and growth of a cell to form others.

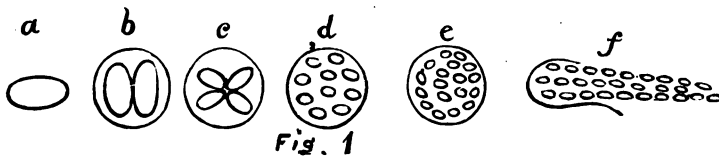


Fig. 1

At *a*, we have a single cell. *b*, cell dividing within its cell-wall into two. *c*, cell dividing into four. *d*, cell dividing into eight. *e*, cell finely divided into minute cells. *f*, rupture of cell wall and escape of young cells.

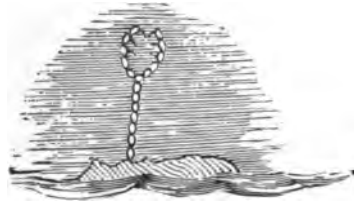
The young cells having escaped from the parent cell are ready to enter upon a new existence and they at once arrange themselves in a straight line to form a simple foot-stalk, with one end fastened to a rock as in Fig. 2.



Fig 2

Row of cells attached to a rock in the sea.

Upon the top of this simple line of cells others add themselves and we have the lowest form of sponge. A few Cilia or hair-like processes are developed upon the inner side to waft towards them the elements contained in the water which they use as food, as in Fig. 3.

**Fig .3**

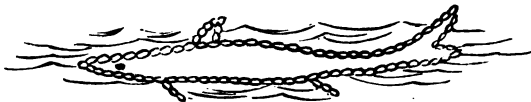
Cells uniting to form Sponge.

The line of cells can be easily developed into higher forms of sponges, algæ, and crinoids, or it can detach itself to form a simple worm with a free movement in the water, enabling it to travel about in search of its food. This movement places it a step higher in the scale above its stationery fellow animals the sponges.

Fig 4

Worm swimming about in search of Food.

By the addition of cells and a higher development a low form of fish is evolved.

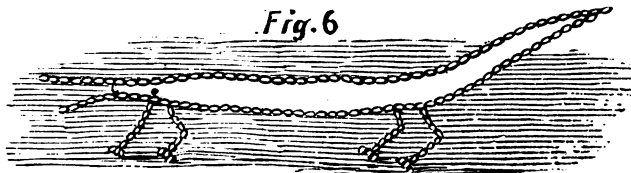
**Fig. 5**

Early form of simple fishes.

Fig. 5 shows the earliest forms of these fishes and it will be noticed that the upper fin of the tail is larger than the lower. This form belongs to all the early fishes. It will be impossible to mention here any but a few of the most typical forms of life. Between the single cell and the sponge there is] a vast multitude of Protozoan forms, systemless animals which fill up the gap between, and also between the simple worm and the fish,

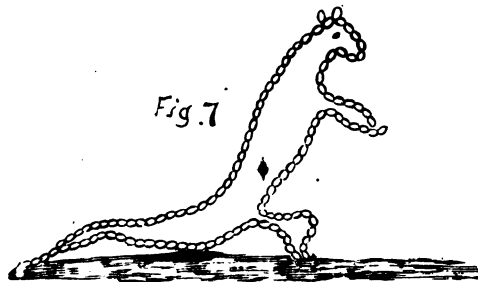
which has a vertebral column, there is a great array of intermediate forms which fill up that gap. The evolution of animal life is orderly and slow, not abrupt.

From the lower forms of fishes come the higher, and the evolution of life keeps pace with the evolution of the conditions of the earth, when the air becomes fit for respiration and is purer, then we have after the fishes, the lowest forms of reptiles. A modification of the fish gives us the reptile.



Early form of Reptilian life.

During the long reptilian age these creatures grew to an enormous size, and later became so modified in form, that they insensibly shaded into quadrupeds. There are many animals that seem to form "connecting links" between these saurians and quadrupeds, among them may be mentioned the *Ramphorynchus*, that curious reptile with longer legs than the earlier lizards, diminished tail and singular pointed wing-like appendages that foreshadows the bird as well as the quadruped. A little higher in the scale comes the *Iguanodon*, and higher still the *Megalosaurus*. Following another branch of evolution of this animal tree we see how from the saurians, emerge the animals that later are destined to form the apes. The kangaroo is but a modified lizard.

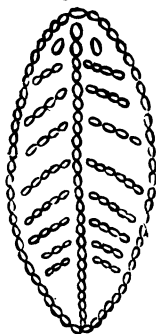


Lizard tilted up on one end to form a Kangaroo.

As saurians progressed in structure and rose higher in the scale of animal life we find them gradually assuming herbivor-

ous habits, and this led them to feed upon the foliage of shrubs and trees. To do this it became necessary to raise their anterior limbs from the ground in order to reach the trees, and this act during long lapses of time at last modified their anatomical structure and converted a fore limb originally intended for progression, into a prehensile hand. The sloths belong to this class. The kangaroo is a grade higher than the sloths, and later come the lower monkeys, after them the higher apes and those anthropoid animals, the orang and gorilla.

Assuming this view of the law of evolution, and we believe it is the correct and logical and scientific view, we see how during the lapse of immense periods of time animal forms have slowly been evolved from the lower to the higher. From the simple cell came clusters of cells, then strings of cells, which shaped the sponges, the crinoids, the worms and the vast numbers of trilobites which were only the string of cells bent round thus :

Fig. 8*Arrangement of cells to form Trilobites.*

and three rows of cells added to form the tri-lobed animal.

The great sub-kingdoms of Radiates and Articulates, are but higher modifications of the strings of cells, modifications which slowly arose and progressed by the great law of evolution.

The early fishes were quite simple, the higher more complex, and in another age we see these higher fishes modifying their fins into flippers and legs, and the saurians come upon the scene.

The prodigious development of these creatures has led

geologists to assign to them a separate age, the age of reptiles, and in this great epoch they must have found the earth a congenial habitat, and the conditions of life easy—for ease of existence and abundant food make animal life prolific—for they multiplied until they actually swarmed in those primitive seas. The enormous tails of these great lizards were organs of propulsion through the water in which they lived, the flippers simply guided their direction, as do the fins of fishes, but as they rose in the scale the flippers became legs, and we find them crawling on the muddy and swampy land.

Later they came upon higher land, and by the law of *Use* their legs became the organs of locomotion, and by the law of *Disuse* their tails degenerated and we have quadrupeds.

The improved condition of nature in the Mammalian age, the universally warm climate, the luxuriant vegetation gave a great impetus to the evolution of animal life. The abundance of food made the struggle for existence less fierce, the law of natural selection and of *Use* and *Disuse* changed and modified the forms of animals life, now so prolific and abundant.

We see reptilian forms diverging more and more. Structural changes are taking place, the most striking of which are an increased development of the humerus, the radius and ulna in the anterior limbs and the femur, tibia and fibula in the posterior. This increased growth is a direct result of the increase of the area of dry land, making it necessary for the reptiles to have some other means of locomotion than the fin-like flippers that served to guide them in the sea. So during long epochs these changes took place, influenced by the law of *Use*.

As they developed these locomotory limbs their tails were no longer necessary for propulsion and so as we advance in the animal scale we see the caudæ slowly atrophying until when we reach the higher animals we find them composed of degenerate vertebræ, having little or at most a secondary use, that of switching insects from their bodies. Even in the prehensile-tailed apes who use this organ for grasping, its use is secondary, for these animals never trust to it to *wholly* sustain the weight of their bodies, they merely use it in conjunction with a hand or foot. In the higher Anthropoid Apes and in man the cauda has reached the extreme of degeneration through *disuse*

and we find it atrophied to four small bones which consolidate in adult age, having no office to perform and which is called the coccyx.

The change from the pachydermatous, horny hides of reptiles, which is composed of agglutinated epidermis, to that of Armadillo's, Hippopotami, Boars, Tapir's and Elephants up to the later mammals, as the Tiger, the Hyena, the Deer and the other softer skinned animals covered with, first, bristles, then coarse hair, then fine hair, is due to dry land and a dry atmosphere. The close, thick fur of the Bear, Fox, etc., came later with a change of climate.

The Reptilian Age closed when these great lizards slowly changed to quadrupeds. But what became of those strange and monstrous forms, such as the Ichthyosaurus, the Pleisosaur, the Iguanodon, the Megalosaurus, the Ramphorynchus, and many more besides that swarmed in those early seas. Their extinction was inevitable, it followed just as harmoniously and as sequentially as their evolution. They lived in shallow seas and muddy swamps. During long lapses of time these seas were slowly replaced by the gradual up-lift of the land, and the muddy swamps originally salt were slowly closed in by these uplifts, rains turned them into fresh water lagoons and finally they became dry land covered with a luxuriant vegetation.

These causes combined with the ever upward law of evolution were sufficient to extinguish most of this great species. Those that have lived to our own time, such as the alligator and crocodile, have become fresh water species and inhabit warm latitudes as they did in primitive ages.

In the Mammalian ages we notice a vast number of animal forms with most of which we are familiar to-day. A few such as the Anoplotherium, and others of the horse tribe, the Mammoth, the Mastodon, the Megatherium, and the great Sloths have passed away, leaving behind them their history in their fossil remains. The cause of the change from the Pig to the Elephant is to be found in the law of progression and favorable conditions of life as among the more important.

When we carefully study the Vertebrates we shall find that

many of the differences between them are more apparent than real.

In the order *Felidæ* we find the osteology of these animals strikingly uniform, the real differences being in *size*, which is only relative, and in the color and markings of the hair, and this last is largely influenced by climate and natural selection. Their structure anatomically is the same, as also are their habits.

The Sheep, Goat, Llama, Guanaco, Deer, Camel, Giraffe are, scientifically speaking, identical. To the eye they present differences in size, color and hair. The first has fine hair or wool, all the rest have hair closely alike in texture, but their skeletons, stomachs, and outward habits are essentially the same.

This is true also of the *Canidæ*, it is true of the *Ursidæ* or Bears, it is true of all the different orders of Vertebrate mammals.

The real differences between them are slight, the outward differences are due to modes of life, of habits, and of climate.

The fishes present few scientific differences. Their osteology shows a remarkable uniformity of structure. Size here again is relative. The differences of color are due to the same causes, viz: external influences and habits of life.

This is true again of the Birds. The causes of change in their form and color are due to climate and surrounding influences.

Speaking generally, and yet correctly, we may begin back, say with the Lizards, and regard the different orders—the *Proboscidæ*, *Ursidæ*, *Felidæ*, *Canidæ*, *Hyenidæ*, *Bovidæ*, *Cervidæ*, *Camelidæ*, *Simiidæ*—as different branches of the same animal tree, having fundamental similarities, but superficial points of variation, and these varying points are due to the spread of species over the the earth, the impress of climatic conditions, natural selection, “the survival of the fittest,” the extinction of weaker forms, the geological changes in the earth’s surface and the influence of food.

Perhaps the most startling changes in animal forms have been those brought about by the influences of Domestication. This has been more especially observed in the Horse, Cow,

Pig, Dog and Fowl, because these species have been brought under the immediate influence and absolute control of Man.

Beginning with the horse we see a great variety of forms from the heavily boned and massively built work-horse capable only of slow motion, but of enormous strength, to the fleet, thoroughbred racer, whose slender and agile limbs seemed clothed with the terrific speed of the locomotive engine. These changes in the equine form are wholly due to selection by man to crossing and to interbreeding. A man having a mare with certain qualities which he desires to perpetuate and improve will select with the greatest care a stud having like or superior qualities and pair her with him. If he desired strength or speed he will cross his mare with this special object in view and the mare will transmit her good qualities, thus improved by crossing, to her foal.

Men who breed horses for the turf know that the quality of speed is transmitted and so they choose those having a long ancestral record to cross with and breed from. The breeding of thoroughbreds has been raised to a fine art, and breeders study with minute zeal the poise of the head, the width and depth of the neck, the shoulder, chest and leg, knowing that these "horsey points" have much to do with the excellence of the animal and consequently his price.

With the cow, the quality of the milk and the flesh have been objects of the greatest care. Some, like the Alderney, have been bred for their milk-giving power alone; others, and notably the Durham, have been bred solely for the quality of their flesh as food. Even in Texas and the west, where no special object has been had in view, cattle owners have tried to improve the general excellence of their stock.

Pigs come under the same law. They vary by the same influences of domestication regulated by Man. In these animals we see every variety of form from the lean, gaunt wild boar, with long legs and flattened sides, to the improved Suffolk, which is almost a shapeless mass of fat.

Perhaps we see in the Dog the most striking change induced by domestication.

From the dainty skye and the delicate-limbed black-and-tan

to the ferocious bull-dog and the heavily-boned mastiff we see every variety of form and color.

The practice of breeding in and in, or of pairing a brother and sister, which is the closest relation of consanguinity, has a vast influence in continuing and increasing certain traits or qualities. Color, size, shape of head and limbs are affected by this practice, and a great degree of *fineness* and purity of blood is attained by it.

The ordinary black-and-tan has been so selected and crossed with the best specimens of his kind that elegant animals with finely shaped heads and legs have been produced.

The bloodhound has been bred to improve his sense of smell and his olfactory bulbs and nerve filaments have been actually increased in size.

Pointers show the effects of selection and close breeding in a high degree.

All these varieties of the *Canidæ* which have sprung from a common stock have been produced by a long continued selection, close interbreeding and crossing. The changes in form have been accomplished with comparative ease by the absolute dominion of Man over these animals.

With Fowls precisely the same thing is true. The different strains of varying purity are the result of selection crossing and interbreeding under a long domestication.

With Birds in the natural state, the varieties seen in them are due to climate, habits and food through considerable lapses of time.

If this same law of selection could be applied to Man, if in marriage men and women could be selected and crossed with the especial view of transmitting certain good qualities and of suppressing certain bad qualities if men who are healthy, sane, and temperate could marry women who are also healthy, sane, and temperate, we should see not only an improvement in the physique of their offspring, but a positive decrease in the sum of insanity, intemperance and misery upon the earth.



ART. V.—SOME DISEASES OF THE EYE IN LOWER ANIMALS.

BY WILLIAM OLIVER MOORE, M.D.,

*Prof. Comparative Ophthalmology, Columbia Veterinary College, N. Y.,
Assistant Surgeon New York Eye and Ear Infirmary, etc.*

IT is only recently that the diseases of the eye of the lower animals have engaged the attention of the specialists, who devote themselves to the study of the causes, nature and cure of the numerous affections to which the eye is subject. With the exception of a few special diseases the inferior animals have most of the ophthalmic affections common to man. No doubt the list of affections of the eye of horses, cattle, sheep and swine might be extended if we would more carefully employ the improved means of observation, so constantly used by the ophthalmologist. The horse whose eyes are a special subject of solicitude, is credited with more diseases of this organ than all the rest of the animals on the farm put together. The ophthalmoscope is one of the most valuable aids in determining diseases of the interior of the eye, and those few veterinarians who have learned to use it entertain no doubt of its great value. The instrument has not, however, come yet into general use, but soon will, as each year the students of Columbia Veterinary School are instructed on the living subject. In examining a horse for soundness the ophthalmoscope should be used, for, latent disease of the interior of the eye can only thus be determined; by it, it has already been shown that Periodic Ophthalmia in the horse is not an interrupted, but a continuous disease, viz: a choroiditis. Another method of examining the eye is by a two inch convex lens, which is used to condense the light and then illuminate the external parts of the organ—sunlight or artificial light may be employed—it is called oblique illumination. It is especially serviceable in detecting foreign substances, hayseed and the like, on the cornea or conjunctiva. By the aid of these two means, the ophthalmoscope and the oblique illumination, we can detect

any disease, either of the internal or external parts of the eye. Having thus these means of observation and aids to diagnosis, let us look at some of the more common affections of this organ.

Simple Conjunctivitis—In other words an inflammation of the mucous membrane, lining the eye-lids and covering in part the eye-ball; a membrane continuous with the pharyngeal mucous membrane through the nasal duct. Thus many cases of conjunctivitis arise from common cold and influenza by continuity of tissue.

It is a very common form of disease in all animals, and although simple in its nature, it gives rise to a great deal of temporary inconvenience owing to the extreme sensibility of the conjunctiva.

It most commonly is caused by cold, but may be induced by various means, as a slight blow, the contact of a twig when the horse is in motion; particles of dust may be accidentally lodged on the eye, exposure to the sun's rays, especially if the soil is bare of pasture, all of which deserve recognition.

The disease is attended with well marked symptoms. First there is intolerance of light (photophobia), with marked injection of the palpebral and ocular conjunctiva, increased flow of tears, with some swelling of the eye-lids, which have an increased temperature. On everting the lids, especially the upper, the mucous membrane is found to be congested and the retro-tarsal fold swollen; in some cases the ocular conjunctiva is swollen and presents the appearance of a "water blister," this condition is known as chemosis.

Mucous secretion in increased quantity soon makes its appearance, the amount varying with the severity of the disease.

There is generally no pain, but rather the sensation of heat and itching, the eye feeling as if particles of sand were under the lid. As a rule, in simple cases the cornea is not at all effected, but where the oedema of the ocular conjunctiva is great it may become milky in appearance, owing to the malnutrition of the part, this generally disappears on the subsidence of the inflammation. In animals this milkiness of the cornea clears up remarkably quick, whereas in the human subject it is very slow to yield. The vision is generally interfered with owing to the fear

of light, and in the horse the thrusting forward of the nictitating membrane. In some cases the secretion agglutinates the lids together, and in others only collects in the inner canthus.

Conjunctivitis from cold usually occurs in both eyes at once, if from injury in one or both, according to the nature of the case. The only disease likely to be mistaken for it is periodic ophthalmia (iridochoroiditis) in its onset; if we remember, however, that the latter occurs in one eye only, as a rule, at first, we will avoid mistakes.

The treatment of simple conjunctivitis consists in most cases of local measures alone. Rest is very essential if the case is very marked, and with it pure air is an adjunct. A horse confined in an ill-ventilated stable is in a fair way to have his conjunctivitis kept up from the ammoniacal vapor.

Various astringents may be used; a favorite one being a solution of one drachm of pulverized alum to one pint of water, dropping in three or four drops upon the eye-lid every three hours.

Where this does not act well, nitrate of silver, five or ten grains to water one ounce, may be used by means of a camel's hair pencil, everting the upper lid and then carefully applying it. The application of water, ice cold, by means of a sponge or cloth to the closed eye-lids adds very much to the comfort of the patient. These may be used every two hours, continuing them from ten to fifteen minutes.

Generally with the use of the cold water and alum solution most mild cases subside in a few days. Should they not the silver solution may be substituted.

Purulent Conjunctivitis.—Some inflammations starting as catarrhal degenerate and become purulent in character, having an increase in all the symptoms.

A purulent inflammation of the conjunctiva occurs in some seasons of the year among cattle and sheep which are feeding in low, damp situations, especially in spring and autumn during the prevalence of rain with cold winds.

When the affection assumes an epizootic form it is termed "blinds."

The existence of "blinds" among animals at a time when no special cause could be detected, led to the theory that it was

due to a variety of gadfly, which it is supposed deposits its ovum in the centre of the cornea and thus causes the irritation.

Some ground for this theory is furnished by the appearance of the cornea, a small spot, well defined, situated in the centre is found which, by a vivid imagination, might be made to resemble a puncture produced by the ovipositor of a fly. Careful microscopic search has, however, failed to show the presence of the ovum or any other foreign body.

The symptoms of "blinds," or purulent conjunctivitis, begin as in the mild form, but the mucous secretion gives place early to pus, the conjunctiva becomes more inflamed and swollen, and in consequence of this the cornea suffers, often ulcers forming in its tissue and frequently necrosis of the entire cornea through malnutrition. The purulent secretion is contagious and many animals become infected by actual contact.

The lids are very hot and swollen and purulent matter oozes out of the lids and runs down on the face, both eyes being in the same condition usually. Prolapse of the iris often happens and in some instances the whole eye is lost from general inflammation.

Treatment of such cases varies according to the special symptoms.

When large numbers of cattle or sheep are attacked the best thing is to remove them from an exposed situation and give them such shelter from sun and wind as may be available, isolating carefully the well from the diseased. Cleanliness is invaluable in such cases, as the secretion is very ichorous. The eyes should be washed out at least four times daily with a saline wash, or by means of a solution of boracic acid, twenty grains to the pint.

In the severe cases the upper lid should be everted and an application of nitrate of silver, ten grains to the ounce of water, made by a camel's hair pencil; this may be made twice daily. The cornea should not be touched by the silver, as suggested by so many authors on veterinary medicine, as a deposit of this salt will tend to increase the corneal opacity, thus impairing the future usefulness of the eye.

In the mild case the alum solution before mentioned may be used.

If the cornea has a deep ulcerated surface a solution of sulphate of atropia, grains two, to water one ounce will be found useful in dilating the pupil and also in allaying the pain. This solution may be used three times a day, using two or three drops at a time.

When the bowels are inactive a good dose of Epsom salts will be found a useful adjunct to the other measures.

Often in "blinds" the nasal mucous membrane is highly inflamed, in fact the eye trouble often arises in that way. It is well to syringe the nose with a warm solution of boracic acid that the secretion may be removed and the germs destroyed by the anti germicide.

After the disease has passed away the cornea presents many varied aspects, opacities, more or less extensive, according as the disease has been pronounced. The eye-lids often need treatment after the purulent inflammation has subsided, as the conjunctiva may become granular, keeping up thus a weak and watery eye. This granular condition may be treated by sulphate of copper in crystal, applied to the inner surface of the lids.

133 East 38th Street, N. Y. City.

(To be continued.)



ART. VI.—ATAVISM AND REPRODUCTION.

BY JOHN N. NAVIN, V.S.

THE above kindred subjects have been pretty thoroughly discussed through agricultural papers and stock journals for many years past and lately in college journals. Many papers have been written pro and con, on both subjects by scientific men, while other articles were from men having no standing in the veterinary profession and unable to advance one argument based on anatomy or physiology in proof of their theories. In the vast bable of conflicting opinions upon the subject of reproduction, I find some of undoubted ability advocating a theory by means of which breeders of stock are able to control the sex by treatment of dams and sires prior to conception of the embryo. I gave the matter very little attention, until recently when I noticed a very sensible article on reproduction in the *Turf, Field and Farm*, and one on atavism in the *Live Stock Journal*.

I shall now quote the articles alluded to. The writer in the former says: "There is a point in embryoism beyond which mortal ken has not penetrated, a Rubicon which the most scientific mind cannot cross; there are secrets of reproduction which the creator has reserved to himself. To begin with, we cannot fix the sex."

The other gentleman, whose article appeared in the *Live Stock Journal*, says, in relation to the subject of atavism:

"The influence that the sire has upon the dam on her first impregnation, which appears to extend to her subsequent colts, is a difficult problem to solve. It has been held upon this theory, that if you breed a young thoroughbred mare to a cold-blooded horse, her subsequent produce will be ever afterwards adulterated with common blood from the nervous effect upon the dam from this first embrace."

The above theory I fully endorse except the influence by which the system of the dam is adulterated by the sire, and I

expect to prove that if a mare impregnated by a horse of a foreign breed aborts before it is vivified, her system will remain unadulterated by her impregnation, but the moment the embryo becomes vivified the mare's system receives its first step toward adulteration, and upon the full maturity of the offspring, whether delivered alive or posthumous, the dam becomes a full cross of the sire of foreign breed who impregnated her, and she becomes forever after incapable of breeding a thoroughbred of her own stock by any sire, be he of her own lineage or foreign thoroughbred descent.

Common sense should dictate to us that neither part or parcel of the sire can enter into the nervous system of the female, and that the nervous effect upon a female in an act of copulation, is nothing more or less than the result of her being in heat at the time, and the mechanical contact of the organs of both cause the ejection of the natural secretions of both male and female, and each experiences a nervous sensation whether impregnation results from the act of coition or not.

If it be only a nervous shock, and the result of one act of copulation can change the thoroughbred nature of a mare, a subsequent embrace by a thoroughbred must exert a like change in favor of his breed, no part or parcel of either sire possibly entering the nervous system of the mare to remain there.

There is, however, another and most potent law of nature by which the entire system of the mare is changed into a cross of her first impregnation, but she is perhaps not invulnerable to a subsequent influence by another male of foreign breed whose cross may more fully adulterate her blood and estrange it from that of her ancestry, but the first adulteraton can never be eradicated from her system.

It may be well to inform the student that every animal in creation except those who impregnate themselves are impregnated through the medium of an ovum.

Fowls and fishes are provided with an ovary in which the ovum is produced and matured, its open end facing toward the organ through which impregnation is performed. A large number of ova are produced from the closed end of the sac and are found in different stages of development, from those

scarcely observable to the naked eye to the fully matured egg near its open end. As the ovum next the open end develops, the female seeks the company of the male and one or two acts of copulation are sufficient to impregnate all the ova which have attained a certain degree of development, and though the male may be taken away and another replace him, the number impregnated will belong to the first male, and the residue will be a mixture of both, the first impregnator predominating.

It is quite different as regards our domestic quadrupeds however; an act of copulation and impregnation must precede the conception of the offspring.

Now we come to the point at which it is necessary to review the law of nature by which a female becomes a cross of the male who first impregnated her. To this end it is indispensable to know the anatomy and physiology of the male and female organs of generation.

Female Organs of Reproduction.—Every female whose ovum is fertilized within the body is provided with a sac called a uterus. There are also two ovaries, one on each side. These ovaries perform the same office in the quadruped that they do in fowls, the ovum being produced by them, but instead of its being ejected and hatched outside the body, the ovum must enter the uterus, there to be impregnated by the male.*

As soon as the ovum is ejected it is received in the grasp of the fimbria of the fallopian tubes, and passes along its tubular centre into the uterus. During this slow process, and for a few days after the ovum enters the uterus the female is said to keep in heat, but her desire commences to cool soon after the ovum is received in the uterus.

The male deposit contains from one to several living animalculæ, which are the vivifying principle of the future embryo. When the animalculæ are deposited by the male, one or more

*The ovum or egg spoken of by the author is formed in the ovaries of the female. These organs correspond to the testicles of the male. They are two in number, one on either side of the uterus and a little above it. A projection from the uterus on each side reaches up to and embraces the ovary. This is the Fallopian Tube, and serves to convey the matured ova from the ovary to the uterus. This maturation of ova occurs at different intervals in different species, and when it does occur the animal is said to be in heat and intercourse with the male is liable to be followed by pregnancy.—ED.

are brought in the presence of the ovum and impregnation occurs.

As to the sex.—The possibility of its control by man, or treatment of the dam prior to or subsequent to conception, I deny. The dam has no control of her offspring from the fact that the sire furnishes the vivifying principle, and that as soon as the form and shape of the embryo presents the first rudiments of the anatomy of the future offspring, the spinal column, the brain, eyes, and the generative organs are the only organs visible, while very little change has taken place in the ovum, or female principle.

The natural inquiry would follow, had the animalcule been neuter when deposited by the male, and the influence of the dam fixed the sex, or had it, when furnished, been male or female, it being a living animacule when it entered the ovum? The most plausible conclusion is that the sex had been determined before it entered the ovum.

We know that mares, cows and sheep having twins or triplets by one act of copulation produce both genders. This is quite detrimental to the theory of the treatment of dams and sires. We also know that sows and bitches produce several of both sexes by one act of copulation.

Atavism.—What is the rule by which thoroughbred stock is determined? If the line of ancestry, or atavism is broken into by a male of a foreign breed when crossed on a maiden female of thoroughbred stock, the offspring is a half-breed, but the greater number of breeders have not been aware that she becomes a cross of her first impregnator. They do not understand how the adulteration of the female system is accomplished for life. To explain this I am carried back to the impregnation of the ovum and must more fully explain the ovum in the uterus.

The ovum, on entering the uterus is enveloped in a soft albuminous covering, which, as soon as impregnation takes place, attaches itself to the walls of the uterus, becomes the afterbirth or placenta, and serves two wonderful purposes of nature; the first of which is to hold the ovum and the future embryo in place. It adheres firmly to the walls of the uterus by a number of ciliated projections upon its external surface.

The second purpose of nature served by the placenta is that the umbilical cord of the offspring is firmly attached to it, and as the embryo grows larger so does the afterbirth, being supplied with blood by the uterus through the placental vessels. Indeed, so closely is the union between the afterbirth and uterus, that pulling the former violently away before a natural separation takes place, a dangerous hemorrhage of the latter is imminent, often resulting in the death of the mother. The reader will bear in mind that the embryo is attached to the afterbirth by the umbilical cord, and the afterbirth to the uterus by its connections, and as is well known by physiologists, no organ or embryo can exist independently of blood. So, here we have a circulating medium between the dam and her offspring. Let us now see how this law of nature is carried on by referring to the spermatozoa deposited by the sire.

The spermatozoa, as before remarked, when deposited by the male, is a living principle, having in it the vitality of the sire which augments as the embryo increases in size. No animate being can exist without blood, therefore as the embryo becomes larger the quantity of blood also increases, which is supplied by the mother. The growth of the afterbirth is promoted by blood from the mother.

Vivification of the Embryo.—The moment the embryo partakes of life the heart beats and the circulation of the blood commences.

We know that no animal can long exist except its blood comes in contact with the oxygen contained in the air. It is therefore certain that the blood of the living offspring is carried through its umbilical cord into the afterbirth and from it into the uterus, and carried with the dam's blood into her lungs, purified and mixed with it at every pulsation, and of the mingled blood some is retained by the dam and sufficient returned to the embryo to nourish it. Exchanged from offspring to mother, the first nucleus in the embryo being from the sire, mixing with that of the dam, no wonder she becomes a cross of her first impregnator and forever incapable of breeding a thoroughbred of her own purity. It is therefore true that the mother's system becomes a cross of her first impreg-

nator, and that she entails it to her subsequent offspring by other sires for life.

One remarkable proof of atavism appeared sometime ago in the Knube Valley. A farmer had imported a hornless breed of cattle from Scotland, and like all new breeds spread over the neighborhood, but upon a full trial did not prove satisfactory, so were abolished. The last son of them was a bull calf, belonging to Mr. Wingate, the importer.

One cloudy night a neighbor informed Mr. Wingate that a black bear was among his cattle. Mr. Wingate, eager to destroy the bear, they being numerous at that time, forgetting his calf, and taking it for the bear, shot it, and for thirty years not a mulay could be found until three of Mr. Wingate's cows dropped hornless calves.

A veterinary surgeon of Scotland, named McGillivray, informs us that a Scotch gentleman, imported a quagga (a species of zebra,) and having a thoroughbred mare in an adjoining paddock to that in which the quagga had been kept, the gates dividing the paddocks were carelessly left open, the quagga impregnated the mare and she brought forth a striped colt. The colt and the quagga were promptly taken out of sight. The mare has since been bred for several successive years to many stallions of her own breed and every one of her colts showed the striping of the quagga. Many such instances are on record.

An idea prevails that the imagination of the mother controls the color of her offspring, and that things thrown upon them, such as blood, etc., mark the offspring of a woman; that looking at an animal called a hare divides the upper lip of a child, but this is now known to be untrue.

In conclusion I confess my unbelief in the possibility of man, by any art or device, changing the sex of any animal by the treatment of its dam, whatever may be said of changing through the sire, and I do agree with the gentleman's remarks in the *Turf, Field and Farm*. "There is a point in embryoism beyond which mortal ken has not penetrated, a Rubicon which the most scientific imagination cannot cross." There are secrets in reproduction which can only be discovered by closer study and more extended experiments. At present we cannot determine the sex of any animal.

ART. VII.—THE EARLY HISTORY OF VETERINARY
MEDICINE AND SURGERY IN THE
UNITED STATES.

BY R. JENNINGS, V. S.

BY special request, I reluctantly undertake the task of writing a brief synopsis of the early efforts made to introduce a higher standard of veterinary knowledge in the United States, and as a matter of history, to place it upon record. At the same time I am compelled to admit my inability to do the subject that justice which I believe it fully merits. I was the first in the country to move in this arduous undertaking, at the time when the practice of veterinary medicine and surgery was in a low and degraded condition, confined mainly to the hands of a very illiterate and intemperate class of men, whose treatment of the sick animal was characterized by ignorance, absurdity, barbarity and superstition. In my early days I witnessed many cruelties upon horses and cattle under the treatment of the farrier, which if practised at the present time would subject the operator to criminal prosecution. Some of these were the infliction of the stifle shoe; the burning of the bars of the mouth in lampas; the pricking and docking of the tail; inserting silver coin in the atrophied shoulder; the inflation of the cellular tissue with air, and many other like devices. The necessity for a radical change, and the diffusion of correct veterinary knowledge throughout the agricultural districts was the incentive which prompted my efforts in this direction. As there were no veterinary colleges in this country at that time, and as I had not the pecuniary means necessary for a trip to Europe, in order to gain a thorough veterinary education, I entered the office of the late, T. J. Corbyn, (then the leading veterinary surgeon in the City of Philadelphia), as a student, and to assist me farther I matriculated at the Pennsylvania Medical College, Philadelphia. During the

winter months of 1846 to 1850 I delivered a course of veterinary lectures each year, to small classes of students from the several medical colleges in the city, whose future field of usefulness were the agricultural districts. About the year 1850 I conceived the idea of organizing a veterinary college, to be located in the City of Philadelphia, and for that purpose made known my plans to my medical preceptor, Prof. James Bryan, formerly of the Geneva Medical College, New York, and through him to Prof. Wm. Gibson, of the Pennsylvania Medical University—the oldest Medical College in the United States. Through their influence the following named citizens, Geo. Cadwallader, John Philips, M.D., Alfred L. Elwyn, M.D., Fred'k Watts, George M. Keim, Hon. George W. Woodward, Sketchley Morton, Alonzo Potter, M.D., and L. L. Ward, readily subscribed to the contemplated veterinary college, and made up a list of \$40,000. An application was now made to the State Legislature, for a charter which was granted on the 15th day of April, 1852.

This, the pioneer Veterinary College of America, was destined to meet with many disappointments, and much opposition from those who should have extended a helping hand. The graduates of European schools, with few exceptions, gave the movement the cold shoulder, regarding the effort as premature, resorting to various, and sometimes disreputable means to discourage those most active in its success. The only recognized members of the profession in the city, who were co-workers in the cause, using their influence and their means, in behalf of the infant institution, were, Thos. J. Corbyn, W. W. Fraley, John Scott, and the writer, who constituted the faculty. An announcement was issued for a regular course of veterinary lectures, upon the several branches pertaining to a thorough knowledge of veterinary medicine and surgery, to commence the first Monday in November, 1853, continuing daily for sixteen consecutive weeks, which announcements were freely distributed, bringing letters of inquiry in return, but no students; young men of education and respectability, would not engage in a profession of so low a standing. In that day the title of veterinary surgeon, was rarely heard, and but few persons in this country, understood its meaning. The members

of the profession were known only by the appellation of "Farrier," "Horse or Cow Doctor." Johnsons Dictionary defines *Farrier* thus; "To practice physick or chirurgery on horses." Walker—"A shoer of horses, one who professes the medicine of horses." Webster—"A smith who shoes horses, a veterinary surgeon." Failing to secure a class, T. J. Corbyn, W. W. Fraley, and John Scott tendered their resignations as professors of the college, leaving the writer alone to fight its battles. Nothing daunted, young and ambitious, I sought to harmonize the discordant spirits by bringing the members of the profession in friendly counsel, and urging them to unity of action. A meeting of the veterinary surgeons in the city was called and the subject discussed in all its bearings. After several meetings were held a permanent organization was effected the 7th day of May, 1854, under the title of the American Veterinary Association, and the following officers were elected to serve one year. President, T. J. Corbyn, V. S.; Vice-Presidents, James Bryan, M.D.; and W. W. Fraley, V. S., Secretary; M. Roberts, V. S., Corresponding Secretary; John Scott, V. S., Treasurer; R. Jennings, V. S., Librarian; A. Tegtmeier, V. S., Counsellor; Marcellus Munday, Esq. *Senior members*, T. J. Corbyn, R. Evans, W. W. Fraley, R. Jennings, M. Roberts, J. Scott, and Aug. Tegtmier.

Patrons—James Bryan, M.D., Wm. Gibson, M.D.

ARTICLE II. OF THE BY-LAWS, SAYS:

"Its objects shall be the cultivation of fraternal feelings among veterinary practitioners; the elevation of the veterinary art (meaning thereby the treatment of diseases occurring in our domesticated animals), to an equal rank with other scientific branches of medicine, the mutual improvement of its members, by the presentation of such cases of disease, together with their treatment and termination, that may come under the notice of any gentleman belonging to the association, which may be deemed of sufficient interest to bring before the Society; the establishment of a Museum of Anatomical and Pathological Specimens; and the formation of a Library, consisting of such works as are necessary to elucidate and impart information on Veterinary Science; and in general, the defence

of the rights, and privileges and immunities of the veterinary practitioners in the United States."

At its Exhibition held in September, 1854, in the City of Philadelphia, the Pennsylvania State Agricultural Society recognized this association, by awarding it the highest premium, a silver medal, bearing the following inscription. "Awarded to the American Veterinary Association for Pathological Specimens, at the Exhibition of 1854." This collection was prepared for the Museum of the Veterinary College of Philadelphia. In December of the same year (1854) Dr. Geo. W. Bowler arrived in Philadelphia, from England. Making his acquaintance I found in Dr. Bowler an able and energetic co-worker. The Trustees of the college pleased with this new acquisition, at once accepted him as a member of the new faculty, consisting of only Dr. Bowler and myself.

It now being evident that a full faculty could not be obtained in Philadelphia, with the opening of the spring of 1855, we started on a mission in the interest of the new school, making a tour through the states of New York, Pennsylvania, and Ohio, meeting many sympathizing friends in our travels, but no material encouragement to the new venture. Failing in our mission, Dr. Bowler, settled down in Cincinnati, where he still remains. At the same time I accepted the position of Veterinary Lecturer in the Ohio State Agricultural College; then located on the Heights, Ohio City, now West Cleveland; retaining that position until the suspension of the college in the year 1857. I then returned to Philadelphia, and again renewed my efforts in behalf of the veterinary college. Soon after my return, I presented the Trustees the following names, (subject to their approval) as constituting the Faculty of the Veterinary College of Philadelphia.

W. W. Fraley, V. S. *Prof. of Materia Medica and Therapeutics.*

T. J. Corbyn, V. S., *Prof. of Pathology and Surgery.*

Aug. Tegtmer, V. S., *Prof. of Chemistry and Pharmacy.*

R. Jennings, V. S., *Prof. of Comparative Anatomy and Physiology.*

These names meeting the approval of the Trustees a suitable building, for temporary use, was secured and fitted up to meet the wants of the Institution. Located at the corner of Sixth and Master Streets.

A dissecting room was built upon the Knackers grounds, where material was always at hand. The Trustees now called a meeting, for the purpose of discussing the propriety of securing a lot and erecting a building adapted to the wants of such an institution, and negotiations were entered into for a site on North Broad Street. John Notman, Architect, was employed to draft a plan for the contemplated building, which was in due time submitted to the Directors and Faculty, and was accepted. The plan consisted of two lecture rooms, a dissecting room, museum, laboratory, hospital accommodation for thirty patients including twelve box stalls, shoeing forge and operating room, with an operating table so constructed as to secure the patient in a standing position, or by means of a crank to lay him upon the side at a proper elevation. Previously to the purchase of the lot however, dissensions arose among the members of the profession, which threw a gloom over the future prospects of the college. The Directors and Incorporators becoming discouraged, abandoned the projected building. Had harmony prevailed, Philadelphia to day could boast of her Veterinary College.

The following extract from "*Porter's Spirit of the Times*," June 15th, 1858, will be read with interest by friends of the cause.

"PROGRESS OF VETERINARY SCIENCE IN PHILADELPHIA."

Dear Spirit—We beg leave to call the attention of your readers to the efforts now being made in Philadelphia, to establish a Veterinary College. After a long struggle on the part of the veterinary talent hereabouts, for the attainment of this object, the road is finally open to complete success; and it is probable that, in a few months, the number of pupils, the facilities for instruction and the necessities arising therefrom, will compel the originators of the plan to announce a faculty, and in other respects assume for the enterprise the character of a regularly chartered and appointed College. A few gentlemen met in the vicinity of the "Knackers," on the 8th instant, at Myer's Place, situated in the northern part of this city. The call was a very limited one, made by a few Veterinary Surgeons, who have been contributing their weight of talent and mite of labor to the grand object in view. Consequently, the gathering was small and "sweetly select,"—confined principally to the actual and interested members of the American Veterinary Association, which by the way, has its origin also in Philadelphia. Your reporter, as an invited guest, had the opportunity of inspecting the premises selected by Drs. Scott, Fraley, and other active movers in the enterprise, for

their present labors. They have a dissecting-room and museum, which are apartments contiguous to a spacious barn and stabling used as an infirmary. The dissecting-room is complete in all its appointments, and is a busy and profitable resort for students in anatomy. The great mortality in horse-flesh would constantly furnish enough subjects for dissection to employ the attention of any number of pupils. With such opportunities and facilities for observation and collection, the natural consequence is the existence of a museum, already large and valuable. There is not such a collection in the United States: and, as the property of the American Veterinary Association, it has won every praise for its contributors, and a prize at a late Fair of the State Agricultural Society of Pennsylvania. As a mere museum of curiosities, it is sufficiently interesting; as a collection of anatomical and pathological specimens in hippology, it is sufficiently valuable; but as the nucleus for the accumulation of facts in the comparatively little-understood subjects of the hygiene, the diseases, the accidents, and their management in the horse, it is grand. It is upon such facts that inductive logic bases its theories, which, when modified by deductive experiments become the key to the mysteries of treatment, and the *signa crucis* to the fount of the laws of all natural phenomena.

While inspecting the osteological portion of the museum, we were struck by the grand and extensive field here presented for the study of human anatomy and pathology. An address was delivered by Dr. Jas. Bryan; this was in substance, the same address, or "Plea for the Establishment of Veterinary Colleges in the United States," delivered on a former occasion before the State Agricultural Society of Pennsylvania. The history of the American Veterinary Association was briefly told, and the importance of the establishment of colleges duly set forth. Such is the substance of Dr. Bryan's very pleasing address. He is an eminent physician of Philadelphia, and in no way connected with the Veterinary Association, except as patron; but his whole heart and education are devoted to the advancement of science in all its departments. We have now done a portion of our duty in making this report. We invite the close attention and aid of the veterinary talent of your city to the subject. Philadelphia has thus far taken the lead; but, without doubt, you present a wider field and more extensive material to insure success. Stir up your medical men, as has been done here. Induce your Brians, your Woodwards, your Ingersols, your Cadwalladers, your Florences, your Potters, for you have the noble counterparts of these Philadelphia names in Medicine, in Law, in Divinity, and in Political Economy—induce them to put their shoulders to the wheel and actively support the effort. We predict that a time is soon coming, when the social and professional position of veterinary practitioners, and the aims and character of Veterinary Science in general, will rapidly attain an elevation worthy the responsibility and importance of the noble calling. The formation of colleges, by virtue of their legal appointments, will "secure the defence of the rights, privileges, and immunities" of their Alumni, "and of the profession at large."

The early history of Veterinary Medicine and Surgery does not differ much from that of other useful sciences which have

revolutionized the world. Its beginnings were small and seemingly unimportant.

The Boston Veterinary Institute was chartered in the year 1855. Its rise and progress can best be portrayed by a Thayer, a Saunders, or a Stickney. In the same year the Veterinary College Institute of New York, was chartered under the direction of Capt. John C. Ralston, M.D., C. V. S. formerly a veterinary surgeon in the British Army. An imposing building was erected on West Twenty-third Street, at a cost of \$40,000 with hospital accommodations for fifty patients. After two years struggle the object for which it was erected was abandoned. The New York College of Veterinary Surgeons, was chartered in the year 1857, which charter was amended in 1862. A building on Lexington Avenue was secured and nicely fitted up for the purpose for which it was intended. But for some reason of which we are not informed it did not prove a success. But to return to the Veterinary College of Philadelphia. Failing to secure a class of students for its proposed sessions, of 1857-'58 and also for 1858-'59 it renewed its efforts for the session of 1859-'60; which efforts were awarded by the application of two students, viz.—Jacob Dilts, of Lamberts-ville, New Jersey, a graduate of the Boston Veterinary Institute, and W. Wisdom, of Wilmington, Delaware, who had been practising Veterinary Medicine and Surgery for nearly thirty years, a portion of which time was in the City of New York. With these two students the first session of the Veterinary College of Philadelphia commenced. Unfortunately for the new institution the course of lectures had scarcely begun, when, from some cause not explained, W. W. Fraley, T. J. Corbyn, and Aug. Tegtmier tendered their resignation as professors in the College. By direction of the Trustees, I at once wrote for Dr. G. W. Bowler, who promptly responded to the call. The expenses falling heavily upon the purses of the trustees and faculty, who received no pecuniary recompense for the services, an appeal was made to the Philadelphia Society for the promotion of agriculture, for assistance, which appeal was referred to the executive committee, who, at the next meeting of the Society, made the following report, relative to the application—that they had visited the library and

museum of the veterinary college, and were surprised to find it so valuable and interesting. They were so favorably impressed that they ceased to doubt the propriety of the application; and therefore offered a resolution: That the use of the rooms of the Agricultural Society, be granted to the Veterinary College of Philadelphia, for holding their lectures during the winter session. Dr. A. L. Elwin, seconded the resolution and spoke earnestly in favor of inviting the faculty of the veterinary college, to deliver a course of lectures upon hippology, under the auspices of the society, which was agreed to unanimously. The College continued to hold its sessions in the Agricultural Hall, until its suspension in 1866.

(To be continued.)

EDITORIAL DEPARTMENT.

VETERINARY SOCIETIES.

IT is quite time that the veterinarians of this country unite to form a national organization which shall represent and look after the interests of the profession. At present there is a United States Veterinary Association which meets yearly and has some good members. It is officered and worked, however, chiefly by the faculty of a single veterinary college and in no sense represents the progressive and scientific element in the profession.

There are in this city and Brooklyn together only seventy-two registered graduates in veterinary science, yet we have at least four veterinary societies of various kinds, none of which do any creditable work. This state of affairs is the result of petty quarrels and jealousies which are disgraceful and injurious.

The veterinary profession is overrun with quacks. No body of men need so much organization for mutual protection, study and information. The hardest thing which a young veterinarian has to contend with is the cheap horse doctor, who goes around advertising his services and boasting of his skill.

If there were one society which all the educated veterinarians were interested in supporting much good might be done.

Veterinarians ought to remember that college quarrels and jealousies should not be allowed to interfere with professional work and progress.

ENGLISH VETERINARY COLLEGES AND THEIR GRADUATES.—Dr. F S. Billings, in an able letter to the *Medical News*, gives us a picture of English veterinary schools, which is as true as it is, unflattering. He says: "These English veterinary colleges are private institutions, utterly without responsibility, until

The profession took its protection into its own hands by the formation of the Royal College of Veterinary Surgeons, which is acknowledged by the Government (only within a few years), and now constitutes the examining and diploma-granting body. Even this we can scarcely ever expect to arrive at in this country.

With reference to these British schools it should never be forgotten, that neither of them have ever produced any scientific contributions to veterinary literature, and that all that can be said of them is that they are and have been successful in producing good routine practitioners.

The English schools are, in reality, nothing more or less than speculative affairs, the benefits going to the teachers and the subscribers, who, for a certain sum per year can have the benefits of the school hospital. There is no very good feeling existing between the profession in the cities where these schools are, especially London, and the faculty, the schools frequently doing a 'cutting' business with regard to fees."

The above description tallies very well with what we have seen of many so-called English veterinarians. Individuals who attach M. R. C. V. S. to their names are getting to be quite numerous in this country. A few of them are excellent gentlemen who do credit to the profession, and these we heartily welcome. Many others are ignorant fellows, and it is a question sometimes whether they are really entitled to the degree they claim to possess. If so, the title of M. R. C. V. S. signifies very little, and the fact is becoming known. The graduates of our two veterinary colleges are, on the whole, much better educated men.

ATTEMPTS AT VETERINARY COLLEGES.—We announced in our last that a Veterinary Department was to be established in connection with the Harvard Medical School. It turns out that the Veterinary Department consists at present of only one Professor.

If this means that it is only a beginning, very well. But if it is expected to create veterinarians by means of one Professor's teaching, we strongly protest.

It is quite impossible to become practical and skillful in

comparative medicine by studying in a human medical college. We gladly welcome the appearance of new veterinary colleges, but the attachment of veterinary Professors, however skillful, upon the faculty of a medical college for the sake of picking up stray students, is a practice to be condemned.

THE LEGAL STATUS OF VETERINARY COLLEGES IN NEW YORK CITY.—During the last session of the Legislature a bill passed both Senate and Assembly and received the signature of the Governor, which forever settles this question of the legal status of colleges chartered or incorporated under the General Laws of 1848.

We print the bill entire so that all may comprehend that *additional validity* is given (if any was needed, which we deny) to the charters of the institutions which have done so much and are still doing such excellent work in the advancement of veterinary science.

AN ACT to restrict the formation of corporations under an act entitled "An act to provide for the incorporation of benevolent, charitable, scientific and missionary societies," being chapter three hundred and nineteen of the laws of eighteen hundred and forty-eight, and the acts amendatory thereof, and to legalize the incorporation of certain societies organized there under, and to regulate the same.

The People of the State of New York, represented in Senate and Assembly, do enact as follows :

SECTION 1. Hereafter no literary or scientific college or university shall be incorporated under the provision of an act entitled "An act to provide for the incorporation of benevolent, charitable, scientific and missionary societies," being chapter three hundred and nineteen of the laws of eighteen hundred and forty eight and the acts amendatory thereof, without the approval of the regents of the university of the State of New York to be endorsed upon and filed with the certificates of incorporation, and the said regents, as a condition of such approval, may impose such conditions as in their judgment they shall deem advisable, which shall not conflict with said acts.

SEC. 2. All scientific and all literary colleges and universities, organized under said act, which shall have reported to the said regents within the two years last past are hereby declared legally incorporated, and all degrees heretofore and hereafter conferred by them are declared valid, and all such colleges and universities shall be subject to the same duties, obligations and liabilities, and to the same control and visitation of said regents, as colleges and universities chartered by said regents.

SEC. 3. All acts and parts of acts inconsistent herewith are hereby repealed.

SEC. 4. This act shall take effect immediately.

STOMACH DIGESTION IN THE HORSE.—The digestion of the horse is a matter of especial interest to veterinarians since so many of the horse's ailments result from disturbances in some part of the alimentary tract. We take great pleasure, therefore, in presenting to the profession the results of one of the most careful studies upon this point that has ever been made. Ellenberger and Hofmeister, in a series of articles in the *Archiv für Wissenschaftliche und Practische Thierheilkunde* report the results of numerous experimental researches regarding stomach digestion in the horse. The following is a resume of their work:

1. Stomach digestion in the horse is of more importance than had heretofore been supposed.

2. Stomach digestion continues from one meal time to another. There is always food in the horse's stomach when he begins a meal. If food is kept from him, stomach digestion is very slow and the stomach is not empty for at least twenty-four hours.

3. The stomach contents after feeding with oats is a relatively dry, crumbling mass, containing 60 to 70 per cent. of water. After a meal of hay, it is more moist and contains 75-80 per cent of water.

4. The reaction of this mess is always acid.

5. The amount of acid in the gastric juice rarely exceeds 2 per cent. Directly after feeding it is least in amount, being only about .08 per cent. It then gradually increases.

6. The gastric juice of the horse is less acid than that of carnivora.

7. The acid is at the beginning of digestion organic, i. e., it is lactic acid. Later, hydrochloric acid appears, but lactic acid is always present.

8. A feed of oats makes the gastric juice more acid than does hay.

9. Inorganic acids check the transformation of starch into sugar when present in proportion of .02 per cent. Organic acids do not check it until it reaches the ratio of .04 per cent. Hence in the early part of digestion some sugar may be formed in the horse's stomach.

10. In the horse's stomach there was found (a) a proteolytic

ferment (pepsin proper), (b) an amylolytic ferment (diastase of saliva), (c) a lactic acid ferment.

11. The turning of starch into sugar is most active in the first one or two hours of digestion. It gradually diminishes and ceases after five or six hours. The larger a meal the longer the sugar-making process continues, because more saliva is swallowed.

12. The amount of sugar in a horse's stomach at the beginning of digestion is, after feeding with oats, 2 per cent., later it is 1 per cent. The amount then decreases. The total amount on the average is at first 3 i. — 3 i. $\frac{1}{4}$; later 3—. After hay feeding the amount of sugar found is less, averaging 3 per cent., or 3 i. $\frac{1}{4}$ 3 ii.

13. The digestion of vegetable albumen takes place actively in the stomach. This albumen is turned into peptone. In the early stages the process is very slow. After a moderate meal it reaches its height in three to four hours; after a full meal in six to eight hours. It follows that heavy meals should not succeed each other sooner than from six to eight hours.

SEXUAL MANIA IN ELEPHANTS.—Elephants which are confined in menageries and gardens are subject at certain periods to attacks of sexual excitement which may end in actual mania. Young elephants as they reach maturity and begin to feel the sexual passion show these symptoms oftenest. In their free condition doubtless there is nothing abnormal in it, but in captivity, owing to lack of opportunity to gratify the sexual appetite, the normal excitement produces a chronic nervous disturbance, which is interrupted by period of acute maniacal excitement.

When this condition is coming on the elephant is restless and uneasy. The cheek-glands pour out a large amount of secretion, the eyes have a peculiar look; the animal often trumpets and flaps his ears noisily; the penis is frequently erected and in some cases (Dekker) the animal uses his trunk to masturbate.

In female elephants this condition is rarely so strongly developed.

In all cases the animal must be carefully watched, as he is treacherous and apt to be violent.

The conditions of sexual excitement and mania may be cured in most cases by low diet. Medicine seems to have very little effect upon elephants. Twenty pounds of Glauber's salts and a quarter of a pound of calomel have been given at one time without effect. Dr. Max Schmidt of Frankfort Germany, has given camphor in doses of a quarter of a pound with doubtful benefit. Fluid butter in three pound doses is recommended by Von Hügel.

GOATS AND HOMŒOPATHY.—It is a pleasure to learn that the goat is an animal which responds well to homœopathic remedies. In Surrey, England, there is a goat farm where *Guillemus capricornis* is raised and milked for the alleged benefit of the babies of London. A visitor says: "The goats, young and old, appear clean and perfectly healthy; their bright, hairy coats are subjected to curry-combing; no troublesome foot disease demands attention as in the case of sheep, and any internal ailments are promptly and successfully dealt with by homœopathic medicines, of which the manager, Mr. Farrer, speaks with the greatest confidence and satisfaction."

We should like very much to have Mr. F. report to us some cases. No doubt infinitesimal doses will affect a credulous man, but not a sensible goat.

DOMESTIC PETS AND SKIN DISEASES.—Dr. Wooster Beach of this city, reports a case of ring worm on the cheek of a child, probably produced by contact with a pet kitten which was diseased.

Two similar cases have been reported in the *Lancet*.

Ringworm is also said to be gotten from horses.

Other contagious diseases may be traced to same kind of source.

Thus Dr. McCall Anderson traces the development of the disease known as favus (*Porrigo favosa*) in human beings to mice suffering from the disease. Cats, which eat the mice, catch the disease and have been known to communicate it to the children who handle them. Fowls have also been known to suffer from it. The danger of allowing children to handle

domestic pets which are suffering from skin disease is probably often overlooked, and deserves to be made known more widely than it is at present.

THE ACTION OF PILOCARPIN UPON HORSES.—After a subcutaneous injection of pilocarpin (gr i.) the saliva begins to flow and continues for about an hour. The injection of a large dose (gr iii.) will cause the secretion of one or two quarts of saliva in a short time. There is also a considerable discharge from the conjunctival and nasal mucous membranes. The temperature rises from two-fifths to one degree F. The heart beats faster by five to ten pulsations. General perspiration does not often occur. Frequent urination will be noticed. After several days' use of pilocarpin the fecis becomes softer. The horse does not seem to be weakened or made less active by the drug. It has been found somewhat useful in diminishing dropsy from kidney or heart disease also in lessening the amount of pleura effusion (in dogs.) Its action on the heart is weakening—a fact to be remembered.

CATTLE—THE BREEDS OF, THEIR DISEASES AND TREATMENT.—The above is the title of a work nearly ready for the press, by A. S. Heath, M.D., Professor of Bovine, Ovine and Suine Pathology in the Columbia College of Comparative Medicine of New York.

The diseases and treatment of cattle, sheep and swine will be published in the form of lectures.

The aim and object of Professor Heath's work is to invite attention to the valuable breeds of foreign cattle exactly suited to the milk, meat, butter, or cheese production of the various sections of the country, resembling nearest those in which the several breeds originated. The appropriate transplanting of breeds of cattle perfected, for a special product, to a foreign location of similar climate topography, grasses, altitude, etc., seems full of thoughtful consideration and worthy of public attention.

From a perusal of the manuscript we perceive that time and expense can and must be saved to breeders and importers of stock by the valuable suggestions therein made. Reference is

made to long and persistent efforts of the breeder who spent thirty years in establishing the only truly American breed of cattle, and in showing conclusively how this might have been done in less than one-quarter of the time, and at a tithe of the expense.

Great stress is laid on the value of establishing herds of grades, adapted to the several cattle industries of our great agricultural resources and localities, by the selection of pure bred males to breed to our best cows. The Doctor shows in his book that by such judicious selection and breeding, that the value of the cattle of the United States can be increased fully one-third, in a few years, while the increase by decades, formerly shows, relatively, more increase in numbers, than in the individual increase of values. He also shows plainly to us, that the most rational and profitable mode of breeding is to breed for a special product, and with reference to locality and its peculiarities, capabilities and demands.


The manuscript also states that the *world* has sixty-five valuable breeds of cattle, of which we have as yet appropriated only eleven, and that even of this sixth we have, most of them we possess so sparingly, that we can not supply one-tenth part of the males required from which to breed grades. That, with the exception of the Shorthorns and Jerseys, we have no considerable herds of these eleven pure breeds of cattle. And that of these two breeds referred to, we do not possess one of each, where we ought to have hundreds. The book contains a chapter on American *grades*, full of most valuable suggestions and thoughtful considerations.

We have only space to speak of another most interesting feature of this coming work. And that is, the illustration of these numerous breeds of cattle, by portraits of the characteristic animals of each breed. This, it seems to us, one of the best methods of conveying valuable information, though expensive to the publisher.

WE BEG to inform our readers that, in future, the JOURNAL will be published by William R. Jenkins, 850 Sixth Avenue, N. Y., well known as a publisher of Veterinary Works. It is

requested that all communications relating to the JOURNAL will be forwarded to the Editor in care of Mr. Jenkins.

THANKS are returned to John Faust, V.S., Poughkeepsie, N. Y., for a fine specimen of Bovine Tuberculosis forwarded to the museum of the Columbia Veterinary College and School of Comparative Medicine.



CASE DEPARTMENT.

I.—A SEVERE CASE OF SPONGY IRITIS IN A HORSE.

REPORTED BY EDWARD T. ELY, M.D.,

Physician to the Manhattan Eye and Ear Hospital, N. Y.

Last winter I was asked by Dr. S., of this city, to examine his horse—a very valuable animal—which had suddenly become entirely blind. The history was that the horse had taken cold during the stormy weather prevailing at the time, and that, while suffering in this way, the affection of the eyes had appeared.

I found the eyes considerably congested and the anterior chamber of each completely filled with a yellowish, jelly-like exudation which prevented any view of the deeper parts. Vision was reduced to bare perception of light, the animal groping about in a pitiful way and trembling with fear when touched. The objective symptoms were exactly like those of the disease known as *spongy iritis* in man, and on the strength of this resemblance I ventured to predict that the sight would be recovered.

I advised the instillation of a two-grain solution of atropine every two hours and the frequent use of hot water fomentations. This treatment was faithfully applied by the groom day and night. The hot water was applied for fifteen to twenty minutes at a time by means of a sponge. Within two days the exudation began to disappear so that parts of the iris could be seen and perfect recovery speedily followed. The groom and the other employees at the stable where the horse boarded were constantly suggesting the application of "a little alum," and they considered the patient doomed because their suggestion was not adopted. Any astringent application would certainly have been very bad treatment.

The behaviour of the animal during his illness, his fright and awkwardness while blind and his evident happiness as sight returned were very interesting to witness.

The case seems to me to be interesting enough to record, although similar cases may be common in the experience of veterinary surgeons.

20 East 30th Street, New York, Oct., 1882.

II.—ADENOMA OF THE BREAST IN A DOG.

REPORTED BY FRANK V. WALTON, D.V.S.

Surgeon to Columbia Veterinary College Hospital.

The animal afflicted was a large bitch about six years old. The new growth involved the anterior half of the right breast, and hung down as an irregular nodular mass. The growth was hard and of about one year's duration. The

animal was in good flesh and apparently quite well in general health. Upon the same side in the inguinal region there was another large and pendulous tumor of several years standing. This tumor, however, was perfectly smooth, soft and doughy, and could be greatly diminished in size. This tumor was diagnosed, as an inguinal hernia.

The tumor of the breast was removed at one of the surgical clinics of the Columbia Veterinary College by Prof. Porter. The ordinary elliptical incisions commonly resorted to in the amputation of the breast of the human female were made. But instead of making them transversely to the trunk they were made longitudinally. This large, irregular and nodulated mass was dissected off from the chest wall, leaving a sufficient quantity of integument to close the wound. Several small arteries were cut, but torsion was all that was required to arrest the hemorrhage. The capillary oozing readily ceased upon applying cold water and the exposure of the lips to the air. The lips of the wound were brought together by fine sutures and the edges of the skin closely and evenly approximated so that as perfect homogeneity of tissue as possible was maintained. The dog speedily recovered from the influence of the ether and apparently did not suffer at all from shock. The following day the animal was carefully taken home. In about one week she was again brought to the College, where it was found that nearly the whole length of the incision had united by first intention. At one point, not more than one centimetre or one-half inch in length, it had not united, but was rapidly closing by granulating from the bottom. The length of the original wound when sewed up was about thirteen centimetres, or five inches. One week later the wound had completely healed and the result was a perfect union by first intention; the scar was very slight and probably in a few months will be wholly imperceptible.

Microscopic Report of Tumor.—The tumor weighed 7,464 grains, or one and one-half pounds. It was distinctly lobulated, as is commonly observed in this form of growth. Sections made through these nodules showed an increase in size of the mammary gland ducts with an apparent hypertrophy of the gland substance. The epithelium of the tubes was also enlarged and showed degenerative changes. There was also an increase in the interstitial tissue, and at points it looked as if alveolar spaces were being formed, filled with elements somewhat resembling those commonly seen in scirrhus carcinoma of the breast. Yet no positive evidence of scirrhus was detected, and the growth may be classed as an adenoma.

[This is an exceedingly interesting case, surgically and pathologically. In its surgical aspect it is of great interest in showing what perfect results can be obtained by care and close attention to the rules laid down for treating incised wounds, namely, cleanliness, arrest of hemorrhage, removal of all foreign bodies, as dirt and hair and a perfect approximation of surfaces. There was one favorable circumstance in this case, and that was, that there was but little hair over the tumor and at the line of incision. Pathologically, this case is interesting in being a true adenoma, a tumor which is not often met with in human pathology.]

It is also of interest in showing a close resemblance to a scirrhus. Had true scirrhus carcinomatous structure been met with, it would have been classed as an adeno-carcinoma. As all the readers of this Journal may not be familiar with the meaning of the terms "adenoma" and "carcinoma" we

would say that adenoma, strictly speaking, is a hypertrophy and new development of the conglomerate gland structure as the mammary gland, parotid and salivary glands and pancreas, etc.

A scirrhus carcinoma is one in which broad bands of tendon like tissue form open spaces, and these spaces are packed full of large, irregular shaped epithelial elements, and in these spaces there are no intercellular elements, and in this respect the carcinoma or cancer differs from the sarcoma. In the sarcoma there is always some intercellular substance.—Ed.]

III.—IDIOPATHIC TETANUS.

REPORTED BY G. P. DELISSER, V.S.

I was called August 29th, 1882, to see a roan horse suffering from idiopathic tetanus, owned by a wholesale butcher and raised in his business. The animal had been under the care of a well known and reputable veterinarian of this city from August 23d, who had diagnosticated the disease early and put him under treatment, such as blisters over the spinal column, free cathartics, but gave an unfavorable prognosis and was consequently discharged. In his opinion, however, I was disposed to concur, but there was some hope in a line of treatment which I had adopted in a similar case.

The leading points in the history of this case are, that August 22d the animal was, to appearances, in perfect health. On that day, he was driven to Brooklyn with a load and returned late in the evening during a heavy rain; was stabled that night and fed as usual.

The morning of August 23d, the groom found that his supper was untouched and the horse sick, with the following symptoms: stiff in moving, and labored breathing.

The veterinarian was at once summoned and the above treatment advised and carried out, but with a negative result.

His appearances at the time of my first visit were extreme nervousness, quivering in almost all of the superficial muscles, breathing rapid, temperature 100° F., nostrils expanded, jaws tightly closed, neck stiff and thrown upwards, slight salivation. There was also great difficulty in moving, even so much that I expected he would fall; bowels constipated, urine very scanty.

Treatment.—Cleared the rectum with my hand, and with difficulty removed several masses of hardened feces. Gave enema of Oleum Lini and 3ii. of Extract Belladonnæ. Had the back and loins bathed with warm water and the blisters dressed with linseed oil and lime water, equal parts of each. Administered gr. vi. of morphine in solution by the mouth every hour until the spasmodic twitching of the muscles was checked, which was accomplished in about twelve hours. Gave enemas of boiled Indian and oat meal for nourishment, about a pint of each at a time in water, twice daily.

August 30.—No marked change. Muscular spasms less marked. Morphine administered every six hours. Same treatment continued.

August 31st.—Muscular contractions diminishing, breathing less hurried, jaws less ridged, in fact they could be opened with comparative ease and the horse swallowed a ball. The ball administered in this way, contained Ex. Bell.

ladonnæ ℥ss., Ex. Hyoscyamus ℥ss., Oleum Tiglei M. xx. Morphine stopped, rectal alimentation continued.

September 1st.—Improvement more marked. Balls, containing Ex. Belladonnæ ℥ss. each, were given, and the Hyoscyamus added to the enemas.

Applied several times a day along the vertebral column and over the jaw the liniment:

R

Chloroform,	℥ii.
Ext. Belladonnæ, Fld.,	℥ii.
Oleum Terebinthe,	℥ii.
Oleum Olive,	℥v.
Mx. Sig. Ex. use.	

September 2d.—Marked improvement, bowels moved freely, urine more abundant, respirations quite free, incisor teeth could be separated about one inch, washed the tenacious saliva from the mouth with a warm salt solution. Gave the following laxative ball.

R

Pulv. Aloes, ℥ss.
Ext. Nux. Vomic, et.
Ext. Belladonna, et.
Ext. Hyoscyam aa., ℥ii.
Mx. Sig. one ball.

Use of liniment continued.

September 3d.—Could open mouth and eat a scalded mash of oats and meal. All previous treatment suspended and small doses of Opium and Bromide of Potassium added to his meals three times daily.

Sept. 4th.—Steadily improving, but has a little difficulty in drinking, bowels regular, micturation frequent, and urine highly colored, breathing nearly normal, muscles a little stiff. Opium suspended and small quantities of the iodide of potass given.

September 7th.—Could lie down and rise without assistance, all treatment stopped.

September 9th.—Quite well.

New York City.

IV.—TREATMENT OF CHRONIC CATARRH BY CARBOLIC ACID WITHOUT TREPPANNING.

REPORTED BY JOHN LINDSAY, D.V.S.

July 5th, 1881, I was called to examine a horse at Clay Pits, Long Island. This animal was supposed to be suffering from glanders. As he was a valuable work horse the owner did not wish to destroy him without my advice.

When I arrived at the farm I was taken to a field where the animal was kept, which was half a mile from any road. The horse was a bad case to look at. He was discharging very offensive matter from both nostrils which had the odor of pus coming from a necrosed bone. The horse was much reduced in flesh and very weak. On examination I found him to be suffering

from nasal catarrh, and on my stating this to the owner he wished me to try and cure him. The disease was of three years standing. At first I thought of trepanning, but having no instrument I concluded to try injecting the nostrils, knowing from experience that if I could reach the necrosed bones with my solution I could make a cure.

Mixing up ʒi. of Calvert's crystalized carbolic acid No. 2, to one pint of water, I injected two ounces into each nostril twice daily. After three days of this treatment there was a marked improvement, which after this was less pronounced, but there was a gradual and steady change for the better. At the end of two weeks the animal had improved much in general health, and at the end four months was entirely cured, and there has been no return of the trouble up to date.

V.—July 24th, 1882, I was called to see a horse suffering from a very offensive discharge from his nostrils of one year's duration. At times there was a marked subsidence of the discharge followed by acute exacerbations. When I saw the case it was in one of the acute attacks. Upon examination I diagnosed nasal catarrh.

I ordered the same treatment as used in the above case and in two months a cure was effected, with no recurrence.

VI.—August 10th, 1882, I was called to see a horse which could not breathe easily and the owner feared the animal was developing heaves. The breathing was labored and there was marked evidence of obstruction in the nasal passages. There was not, however, the double action of the flanks commonly observed in horses. Upon inquiring I found that two months previous to my visit the horse had suffered with a severe discharge from the nostrils which had since ceased. But two weeks after the nasal discharge stopped he had trouble in breathing.

I came to the conclusion that the horse had been afflicted with chronic nasal catarrh and that the turbinated bones were plugged with thick pus. He was placed under the same treatment as the other two cases, and in three days began sneezing and blew from his nose two large masses of thick and cheesy pus, followed by a return of the discharge.

The continued use of the injections, however, terminated the case in a complete cure in one month.

HUNTINGTON, L. I.

CORRESPONDENCE.

TO THE EDITOR OF THE JOURNAL OF COMPARATIVE
MEDICINE AND SURGERY :

Mr. Wortman has recently made important discoveries in the bone-beds of the West, and has furnished me with a summary of the facts, which are of interest to the anatomist. In regard to the discovery of *Phenacodus* and *Meniscotherium*, constituting the new order *Condylarthra*, he says :

"Prior to the discovery of these skeletons no characters had been found among the Ungulata which indicate a group connecting the *Perissodactyla* with the elephants and hyrax. But it is now necessary to create a new order, which Prof. Cope designates the *Condylarthra*. The characters on which this division reposes are found in the carpus and the astragalus (hock or ankle bone) and their manner of articulation. The *Perissodactyla* are distinguished by the fact that the scaphoid articulates with two bones below, and the astragalus articulates inferiorly by two nearly flat facets with the cuboid and navicular bones. They are divisible into ten families, including forty-eight genera, variously distributed throughout geologic time ; but as only four of these families concern us for the present, I will spare the memory of the reader by not discussing the classification of the others. The first to which attention may be directed is the *Lophiodontidae* embracing eight well defined genera, which are not positively known to have existed later than the upper Eocene epoch. It may be recognized (1) by the possession of four toes on the anterior and three on the posterior limbs ; (2) by the molar and premolar teeth being different ; (3) by the non-separation of the anterior and posterior external cusps of the superior molars by an external, rib-like pillar. The next family is the *Chalicotheriidae*, to which ten genera are referred. The digital formula is the same as in the *Lophiodontidae*, as is also the relation of the molar and premolar teeth. The only distinction is found in the separation of the anterior and posterior external lobes by a vertical ridge. The remains of this family range from the lower Eocene to the middle Miocene. The third family is the *Paleotheriidae*, having three toes on each foot. The molars and premolars are alike, and the inferior molars possess perfect double crescents. The fourth family is the *Equidae* in which the digital formula is reduced to one toe on each foot. The molars and premolars are alike and highly complex in structure. It is to this family that all the existing horses belong, and it has been traced as far back as the upper Miocene strata. The *Condylarthra*, on the other hand, are effectually separated from the *Perissodactyla* by the non-alternating positions of the carpals and by the possession of an astragalus whose distal face is convex in every direction, as in the carnivora, and unites with the navicular alone. These families are the *Phenacodontidae*

and *Meniscotheriidae* whose remains have been found so far only in the lower Eocene deposits of this country. It is interesting to note that they are the most generalized of any known Perissodactyla and supply a link long sought in the evolution of the later and more specialized forms of this order.

Mr. Wortman's discoveries have necessitated a few changes in the genealogy of the horse, which is now as follows :

PERISSODACTYLA -	{	Equus,	Equus,
		Protohippus,	Hippotherium,
		Anchippus,	Paloplotherium,
		Anchitherium,	
		Mesohippus,	
		Lambdotherium,	
		Hyracotherium,	
		Systemodon.	
AMELYPODA,		Hyodonta (Cope).	
CONDYLARTHRA	{	Meniscotherium,	
		Phenacodus.	

Yours respectfully,

W. H. CLARKE.

NEW YORK CITY.

To the Editor of the Journal of Comparative Medicine and Surgery :

THE SOILING SYSTEM *versus* PASTURING FOR
SICK AND LAME HORSES.

So far as I know little has appeared in the periodicals or veterinary publications on the above subject. The many important advantages of the soiling system for sick and lame horses make it worthy the consideration of veterinarians and all who are interested in the welfare of the horse.

Much has been written on the soiling system, but mostly in regard to feeding farm stock in general when in a state of health. My object is to show that, in many cases, this is a more desirable system of treatment for invalid horses than pasturing. It is the custom to send sick and lame horses, and especially those suffering from having been overdriven, into the country to pasture. This has had, and still has, many strong advocates, and although most of the advantages claimed for pasturing are true; yet, that this is the most desirable thing to do with such animals is a doubtful question, at least it is one that calls for investigation.

Horses taken from warm stables, especially if accustomed to being clothed, and turned out to roam at large not unfrequently catch cold, sometimes ending in severe maladies. They are exposed to the inclemency of the weather, the chilling storm and the scorching sun—and are frequently fatigued and tortured by insects, when traveling over a large extent of country in order to get a sufficient quantity of food, not overlooking the liability to accident, which is very great. It is of common occurrence for horses sent from a large city like New York to fare very

poorly. A great deal of the available land surrounding the city is not rich enough to produce good grasses, and even if the ground be fertile there is a long period of extremely hot weather when most of the grass is literally burned up and the unfortunate animals that are turned out on such a waste surely cannot improve very rapidly.

The good effects of pasturing can, I think, be artificially produced and at the same time many of the disadvantages overcome by adopting the soiling system, or in other words putting the invalid horses in paddocks, (inclosures of half an acre would be more serviceable than smaller ones.) They would have as wholesome air and as much of it, as under any other circumstances, and such paddocks would allow of the invalid horses taking sufficient exercise, while they would not be fatigued or strained in obtaining nourishment. They would get the benefit of the dews to which so much has been attributed and in large paddocks the animals would have sufficient liberty to permit of them getting as good effects as if in the best pasture.

In paddocks they could be supplied with a great variety of food, and consequently frequent change of the same. The variety of green food which might be given, is one of the most important advantages of the soiling system. A succession of crops should be grown and the variety as extensive as practicable. Occasionally a little grass should be mown and given in connection with the various other green food that is fed. The proper food as well as medicine is very important, whether the object be to remove inflammation from the legs and feet, improve the general health, or to relieve animals suffering from various other ailments.

One acre of rich ground will produce more food, whatever the crop may be, than a dozen acres of the non-productive land that is often used for pasturing, and the quality as well as the quantity will be greatly increased. If a great variety of crops is grown and in rotation, so that in turn, from early spring to late in the fall, green fodder may be fed it will be beneficial. Rye that is sown in the Fall will be ready to cut in the Spring long before the pasture is good. Then again all through July and August when the grass is "burned up" various kinds of green fodder will be in perfection and will be greatly relished by the animals. The soiling system, if properly conducted, will be found quite as economical a method of treating invalid horses near great cities, as pasturing. When soiled, the patients are under constant observation, and are at hand to receive such medical treatment as may be necessary. The liability to accidents, as already stated, is much less than when at pasturage.

More rest is obtained. It must not be forgotten that rest is the principal factor in the treatment of many ailments to which man and beast are subject.

Respectfully,

WILLIAM HERBERT LOWE.

To the Editor of the Journal of Comparative Medicine and Surgery :

DEAR SIR—Can you direct me where to find a good article or work which treats of that peculiar disease known as "milk sickness" in cattle, etc.

JACKSON, MO., Nov. 26, 1882.

The literature on the above subject is very meagre. Very little is known concerning its etiology, pathology or treatment.

It seems to be an endemic disease peculiar to the valley of the Mississippi. It occurs at all seasons of the year and derives its name from the fact that it is often communicated to other animals through the milk of animals, and it is also equally well propagated by the flesh.

If any of our readers have a personal knowledge of this singular malady we respectfully request them to write up the subject for the next number of the JOURNAL.—[Ed.]

Obituary.

Dr. Edmund Grindal Rawson, an old and highly respected physician, died at the age of 78 years. Dr. Rawson was born in Broad Albion, N. Y., on Nov. 30, 1808. He graduated from Union College in 1826. He then entered the College of Physicians and Surgeons, in this city, and was Assistant Physician in Bellevue Hospital in 1828 and 1829, afterward practicing medicine for two years in his native town. In 1832 he returned to this city, where he has been a successful medical practitioner ever since. Dr. Rawson was one of the incorporators of the New York College of Veterinary Surgeons, and was its President at the time of his death. He was also a member of the County Medical Society. In 1834 Dr. Rawson was elected to the Common Council of New York, where he served for several years. His death was caused by paralysis. He leaves a widow, but no children.

E. V. Ripley, V. S., of Portland, Maine, 58 years of age, died at Colorado Springs, where he had gone in the hope of restoring his failing health.

REVIEWS.

ANATOMICAL TECHNOLOGY AS APPLIED TO THE DOMESTIC CAT: AN INTRODUCTION TO HUMAN, VETERINARY AND COMPARATIVE ANATOMY.
By Burt G. Wilder, B.S.M.D., Professor of Physiology, Comparative Anatomy and Zoology in Cornell University, and of Physiology in the Medical School of Maine, etc., etc., and Simon H. Gage, B. S., Assistant Professor of Physiology and Lecturer on Microscopical Technology in Cornell University, etc., etc.: New York and Chicago, A. S. Barnes & Co. 1882.

This timely publication must prove a valuable boon to the student of the natural sciences, for it not only supplies a long-felt need in its own special province, but it is replete with general suggestions and directions calculated to be of the highest value to the student of chemistry, botany and zoology, as well as to the student of comparative anatomy. The leading feature of the work is its emphatic plea for method in the prosecution of scientific aims. Each day the field of scientific labor widens and each separate branch continues more and more to overlap the others so that the investigator is bewildered in contemplating the number and variety of the lines of thought he must follow out if he means to be abreast of the scientific problems of the day. Economy of labor and of time is therefore of paramount importance, and of this the authors of the work in question must have been thoroughly convinced, for they give evidence on every page of having worked according to the strictest of methods as students, and they have certainly proved themselves superior teachers by laying down an admirable set of rules for those who desire to follow in their footsteps. Method is of a two-fold sort, the method which must characterize our thoughts and intellectual habits, the method which logic inculcates, and the method of practice, which has reference to the distribution of time and the selection, preservation and handling of the tools and material with which we have to work. The authors have dealt lucidly and intelligently with both phases of method. Understanding that our intellectual processes depend altogether on language, that vague, unmeaning terms engender corresponding ideas, they first address themselves to the task of furnishing to the student of anatomy a system of terminology which is at once intelligible, founded on the laws of philology and consequently, a fact of extreme importance, easily remembered. But they had to tear down before they could build up; they had to show reason why the present system of anatomical terminology was radically defective before they could with good grace offer a substitute for it. This, however, was not so difficult to do, for no science has been so hampered with a bizarre and barbarous nomenclature as human anatomy. The different regions of the brain have been designated in the most fanciful manner without a particle of reference to function. What, with a *corpus album subrotundum tubercula quadriga-*

mina, the *Island of Reil*, the *Pons Varolii* it is no wonder that medical students regard the brain as their special *bête noir*.

But the great defect of anatomical nomenclature hitherto has been its lack of adaptability to the purposes of comparative anatomy. Thus the terms "posterior" and "anterior," which are met with at every line of Gray's Anatomy, utterly fail to describe corresponding regions in quadrupeds, and so with respect to the majority of regional terms in anatomy.

The authors, therefore, have wisely discarded all terms that are not equally applicable to the cat as well as to the human subject whenever there is question of similar organs. This procedure has the effect at once of greatly simplifying the study of comparative anatomy, and indeed makes a great portion of it a mere reproduction of knowledge previously acquired. Inflection is of the utmost value in the construction of scientific terms, since thereby, through the intervention of a very slight change, the same term may serve to designate a great variety of purposes. The words *ental* and *ectal*, which are of the authors' introduction exhibit an instance of this value of terminal pliancy, since from signifying region they may be made to indicate direction by changing *l* into *d*.

In the chapter on the general description of the skeleton the value of this clear and scientific system of terminology can especially be appreciated. Here the careful student can follow the minutest subdivision and distribution of parts without confusion or uncertainty springing up in his mind to arrest his labors, or what has often happened to lead him into error. The authors have not disdained to give apparently trifling directions in the practical details of dissecting. It is only in appearance that such details are trifling for in reality they are highly important to the uninitiated beginner who thereby is enabled to save much time and labor. Should the student ever flag in his work he need but read over the series of timely and pithy aphorisms selected from the best known writers, and he will be stimulated to renewed exertion and find his enthusiasm kindled afresh. But we have not space to insist at greater length upon the valuable features of this instructive treatise. We can only say, in all sincerity, that it will enable the student to compress an immense deal of work into a very short space of time, and impart a character of more thorough efficiency to his labors.

BOVINE MEDICINE AND SURGERY: By J. Woodruff Hill, F.R.C.V.S., 650 pages with 153 illustrations. London, Bailliere, Tindall & Cox. 1882. New York, William R. Jenkins, Sixth Avenue. 1882.

This work is in many respects a valuable volume for the library of the veterinary student and practitioner. The profuse quotations from many *human* and *comparative* pathologists and medical writers renders Professor Hill's book of great benefit to those who do not possess all of the valuable works on comparative medicine and surgery. We have carefully examined the quotations and have not discovered a single instance where proper credit was not given. Prof. Hill manifested excellent judgment in the extended and appropriate quotations from the best writers. And if he seems to some rather too profuse in his quotations from writings of George Fleming, he could not have paid a more deserving compliment to genius and learning.

The author, in the introductory chapter on "Health and Disease," offers many practical suggestions with reference to the manner of securing and maintaining proper hygienic conditions as necessary factors in the development of the organism. The chapters following are concise, and indicate extensive and intelligent observation on the part of the author. Special attention is given to symptoms and treatment, the pathological condition being demonstrated with unusual clearness, by photolithographs and wood-cuts. Many of the diseases, such as splenic fever and pleuro-pneumonia, are treated of at length, there being no speculative statements made, but simply facts given, such as have been deduced from data furnished by the cases investigated and treated.

On page 153 the author says: "An excellent article on this latter form of stomatitis (gangrenous stomatitis) appears in the VETERINARY JOURNAL January, 1881, from the pen of A. E. Macgillivray, M.R.C.V.S., Banff, N. B., in which he recommends excision of every vestige of the disease, dressing with plu copri sulph, and the administration of sulphate of soda." And again on page 319, he quotes from the same writer on the fatal effects of induration of the cervix uteri of animals, recorded in Fleming's "Veterinary Obstetrics," in which are also mentioned some extremely interesting and successful operations for the same. We mention these because of "Notes on Hill's Book," in the VETERINARY JOURNAL, November, 1882, by A. E. Macgillivray.

The arrangement of Prof. Hill's book is appropriate, the letter-press is plain, the style is easy, flowing, and perspicuous; and the field of *bovine medicine* and *surgery* is thoroughly canvassed. As an entire work it is both creditable to the author and to the publishers, and no library of *comparative medicine* and *surgery* will be complete without it.

One feature of this work, eminently worthy of commendation, is the extensive reference to the most noted authors of works on various subjects of *human medicine*.

The most expensive part of book-making is in illustrations. Though Prof. Hill's book is not absolutely perfect in any respect, yet in its illustrations, both colored and plain, it is well up to the standard, as compared to works of a similar character of recent date of publication.

Mr. Jenkins has shown excellent judgment in bringing out so valuable a work at this time. New York is fast becoming noted for its schools of Veterinary Medicine, and we especially commend this work to students who desire to increase their knowledge and at the same time enlarge their library by the acquisition of reliable books on the diseases incident to the lower animals.

ANIMAL PLAGUES—THEIR HISTORY, NATURE AND PREVENTION. By George Fleming, F.R.C.V.S., F.R.G.S., etc. Vol. II. (From A. D. 1800–1884.) London Bailliere, Tindall & Cox. 8vo., 539 pages. 1882.

One of the latest and most valuable contributions to veterinary science and literature is a work entitled "Animal Plagues," by George Fleming, F.R.C.V.S. This volume is a sequel to one published under the same title in 1871. In the first volume are to be found accounts of animal plagues,

which occurred as early as B. C. 1490, and brings the history to the beginning of the present century.

The second volume continues the history onward from the year A. D. 1800.

The researches of this great veterinary author are very extensive, many of the accounts of the outbreaks of disease having never before appeared in English medical literature.

The coincident plagues of mankind are also embraced in the work, showing the intimate relationship which exists between the diseases of the lower animals and those that afflict the human race. Human practitioners as well as comparative physicians will welcome the appearance of this volume. The human physician fully realizes that in order to treat his patients from a scientific standpoint he is obliged to draw upon comparative medical science. The brute creation are subject to so many diseases that are similar in the human patient, and the human being contracting so many diseases, directly and indirectly, from animals of all species, the field of human medical science is widened to vast proportions. It is not denied that veterinarians have thrown much light upon many of the plagues of mankind.

The diseases of feral or untamed creatures and even fishes are recorded and as much space as their importance calls for is allotted to them. At the end of the volume is appended a chronological synopsis of general diseases arranged according to species from B. C. 2048 to A. D. 1844.

Ignorance of the history of contagious diseases has been the cause of immense loss in our own country as well as in England. If more had been known about these plagues we would have had the necessary national as well as State legislation, and veterinarians would been supported in the work of their extermination.

STABLE MANAGEMENT AND THE PREVENTION OF DISEASE AMONG HORSES IN INDIA. By J. I. Meyrick, F.R.C.V.S.

This little book, of less than one hundred pages, contains a large amount of information interesting to veterinarians and exceedingly useful to those who intend practising in tropical countries. The author, believing that "prevention is better than cure," devotes one-half his book to the consideration of hygienic and preventive measures in the care of horses. Diseases and their treatment, however, are not neglected, and the article, "Anthrax," contains all of importance that can be said of that terrible disease. There will be found also some practical hints as to the care of camels, oxen and other animals.

ANNUAL REPORT OF THE VETERINARY DEPARTMENT OF THE PRIVY COUNCIL OFFICE FOR THE YEAR 1881, WITH AN APPENDIX. 8vo., 275 pages. London, 1882.

Prof. G. T. Brown sends us a copy of the above mentioned report which is replete with valuable information. The appendix consists of an elaborate report on the diseases which have existed among animals of Great Britain and foreign countries in 1881, together with statistical tables showing the number of animals imported in the various parts of the kingdom, etc.

CLASSIFICATION OF THE MOST IMPORTANT MUSCLES OF THE HORSE, with origin, insertion, nervous supply, and function of each. By E. Judson Peck, D.V.S.. A chart published by W. R. Jenkins.

BOOKS AND PAMPHLETS RECEIVED.

ANNUAL ANNOUNCEMENT ONTARIO VETERINARY COLLEGE. 1882-1883.

Also names of graduates who hold the Diploma of the Council of the Agricultural and Art Association.

CATALOGUE AND AWARD OF THE DAIRY SHOW, held by the British Dairy Farmers' Association, London.

NEUF. CAS DE GUERISON DE LA RAGE par M. E. Decroix, Veterinaire principal en retraite. 8vo. pp. 32. Paris. 1882.

JOHNS HOPKINS UNIVERSITY CIRCULARS. 1882.

ANNALES ET BULLETIN DE LA SOCIETE DE MEDICINE DE GAND. 1882, THE DISSEMINATION OF TEXAS FEVER OF CATTLE AND HOW TO CONTROL IT. pp. 14. Washington, 1882.

JOURNALS.—The Veterinary Journal, London. Der Zoologische Garten, Frankfort. Wochenschrift fur Thierheilkunde und Viehzucht, Augsburg. Schweizerisches Archiv fur Thierheilkunde und Thierzucht, Bern. Archiv fur Wissenschaftliche und Practische Thierheilkunde, Berlin. Journal de la Societe contre L'Abus du Tabac, Paris. Kansas City Review of Science and Industry. Chicago Medical Journal and Examiner. The Medical Record, New York. The College and Clinical Record, Philadelphia. Annals of Anatomy and Surgery, Brooklyn. New England Medical Monthly, Newton. Chicago Medical Review. St. Louis Clinical Record. Virginia Medical Monthly, Richmond. Nashville Journal of Medicine and Surgery. The Southern Clinic, Richmond. The Western Medical Reporter, Chicago. Journal of Cutaneous and Venereal Diseases, issued monthly, edited by H. G. Piffard, A.M., M.D., and P. A. Morrow, A.B., M.D., New York. The Blacksmith and Wheelwright, New York. National Live Stock Journal, Chicago. The Breeder's Gazette, Chicago. Cultivator and Country Gentleman, Albany. Indiana Farmer, Indianapolis. Mirror and Farmer, Manchester. Truth, San Francisco. Weekly Drover's Journal, Chicago. Agricultural Review and Journal of the American Agricultural Association, New York.

Progress of Veterinary Science.

Erratum—On page 54, 11th line, after 3 insert $\frac{1}{2}$.

HEREDITY.—Brown Sequard, at a meeting of the French Academy of Sciences, March 13, 1882, presented a communication on experiments made on Guinea pigs, which prove that accidental affections of the parent are sometimes transmitted to the offspring.

During his researches Mr. Brown-Sequard has proved the possibility of introducing a tube into the larynx of the higher animals without causing any pain or any subsequent bad result, although the experiment was performed repeatedly, in at least one case, on a single subject. The local insensibility to pain was caused by directing a rapid current of carbonic acid upon the upper part of the larynx through an incision, for from fifteen seconds to two or three minutes. After the operation was completed the anæsthetic effect lasted from two to eight minutes.

DISEASED FOWLS.—According to a yearly report of *post mortem* examinations sent to the (English) *Live Stock Journal*, more deaths are due to diseased liver than to any other cause. Out of a total of 343 cases in 1881 only 9 died from roup, while 85 succumbed to a diseased liver and 52 to inflammation of the bowels.

BRONCHITIS IN BIRDS.—Mix a piece of stale bread with an equal quantity of the coarsest brown sugar, moistened with water, and give it to the bird.—*Land and Water*.

A GOOD MEDICINE FOR POULTRY.—One gill of good whiskey, one-third of a gill of water, one teaspoonful of Harvell's condition powders, one-half teaspoonful cayenne pepper, and mix well together. Give one teaspoonful of the mixture every three hours. If the fowl is very sick physic lightly with castor oil. The above is a sure cure for any disease arising from cold if taken in time.—*Poultry Bulletin*.

A BACILLUS OR A FAT-CRYSTAL.—At a meeting of the Pathological Society at the Charity Hospital, New Orleans, November 21st, an important microscopic demonstration was made by Dr. H. D. Schmidt, President of the Society. Dr. Schmidt stated that beyond doubt the bacilli were fat-crystals. Dr. Schmidt succeeded in finding crystals, which were similar in appearance to bacilli discovered by Koch, and apparently the same. To determine their nature, Dr. Schmidt subjected the crystals to the action of boiling ether, when they disappeared, proving, as he claims, that they were not germs or organisms.

THE PEPSIN OF SHEEP.—M. Gautier has shown that sheep pepsin, well prepared, contains about two per cent. of its weight of insoluble granules, which can be collected and washed on filters of porous porcelain, and appear then to consist of refracting corpuscles rounded or ovoid in shape. In spite of their insolubility these corpuscles seem to possess considerable digestive power, since they can peptonise albuminous bodies, and if left for a long time in pure water, or in water which is slightly acidulated, the substance of which they consist becomes slowly transformed into a soluble pepsin.

BIRDS AND TRICHINÆ.—Birds are not susceptible to infection by trichinæ spiralis. They may be fed upon trichinous pork with impunity.

HYDROBROMATE OF HOMATROPINE has been found very useful for rapidly dilating the horse's pupil. *Archiv f. Thierheilkunde*. It acts more quickly than atropia and its effects disappear more rapidly.

A STRIKING CASE OF ELEPHANTIASIS IN A HORSE is related by Drs. Lustig and Rabe in the jahresbericht der Kong Thierarz, zu Hanover. The disease affected chiefly the lower jaw and right fore leg. The condition after death was, varicose elephantiasis of lower jaw and each carpal joint.

SOFTENING OF BONES IN THE COW.—Mollities ossium in the cow is almost always cured, says Dr. Harris by the use of hydrochloric acid. He gives about 3 ii. of concentrated acid in a pint of water, from three to six times a day.

THE HORSE FAMILY.—The horse family (Equidæ), the horse genus (*Equus*), and the horse species (*E. Caballus*) are often confounded in the popular mind. It may not be amiss, therefore, to sketch briefly the geological history of the family. Introduced first in Early Tertiary, the family was represented in Eocene, Miocene, and Early Pliocene only by polydactyle forms, in which, however, a gradual increase in the middle hoof and diminution of the side hoofs may be traced. In the Upper Pliocene was first introduced a single-hoofed form (*Pilohippus*), which, however, became extinct at the end of the Pliocene and did not enter the Quaternary. The horse (genus *Equus*) was apparently introduced first in the Upper Pliocene and ranged through the Quaternary in successive species: *E. occidentalis*, *Pacificus*, *major*, and finally, *Caballus*. These all became extinct at the end of the Quaternary, and the last (*viz.*, *Caballus*) was reintroduced on this continent in historic times.

ASTRAGALUS MOLLISSIMUS.—Among the plants destructive to cattle in the West (Weis Remedies, 1882), is the *Astragalus Mollissimus*, whose physiological action has recently been studied by Dr. Isaac Ott, of Easton, Pa. He summarizes it as follows: It decreases the irritability of the motor nerve; greatly affects the sensory ganglia of the central nervous system, preventing them from readily receiving impressions. Has a spinal tetanic action. It kills mainly by arrest of the heart. Increases the callosary secretion. Has a stupefying action on the brain. Reduces the cardiac force and frequency. Temporarily increases arterial tension, but finally decreases it. Greatly dilates the pupil.—*Chicago Medical Review*.

PARASITIC DISEASE IN A DOLPHIN.—M. Meguin presented to the Societie de Biologie recently a very much afflicted dolphin. In its stomach were ascarides (*ascaris simplex*); in the biliary ducts were a number of filliform nematoids strongly embedded in the mucous membrane. Finally in the muscular tissues were numerous cystic worms resembling echinococci.

DISEASES AND ACCIDENTS AMONG OSTRICHES.—Few birds, when properly cared for, die from any sickness; more are killed by accident, the most common of which is the breaking of a leg. Even this, however, is rare, and with ordinary attention the risk of mortality with this hardy bird is very small. When frightened during the night they may run at full speed over broken country, yet almost invariably escape uninjured. The reason appears to be that their wings bear them up, and they touch the ground quite lightly. If one breaks a leg, it happens in the day-time, when carefully stepping over a stony place, with wings at rest; the foot slips, or a sudden fright causes the fall, and hence the accident. But as we have said, such rarely occur.

THE NERVOUS DISEASES OF PACHYDERMS.—This class of animals are very rarely subject to any form of nervous disease. The elephant has cerebral congestions and occasionally meningitis, but has few other nervous disturbances. A case of posterior paralysis in the tapir and another in the hippopotamus have been observed. Occasionally the *cysticercus cellulosæ* gets into the brain of *sus scrofa* and causes trouble. Dr. Max Schmidt in a review of the diseases of pachyderms was able to collect but very few instances of nervous disease.

CRANIAL CAPACITY OF THE HORSE.—Dr. F. Eichbaum of Giessen (*Archiv für W. und P. Thierheilkunde*) has made some elaborate investigations regarding the size of the horse's skull.

The following cranial capacities are given :

	Cranial capacity.
Arabian horse.....	712 Cubic c. m.
Russian horse.....	720 " "
Belgian horse.....	768 " "

Eichbaum finds :

1. That the cranial part of the skull is more developed in proportion to the anterior or facial part of the skull in eastern than in western (European) horses.

2. The breadth of the skull of eastern horses is greater in proportion to length than that of western horses.

INCUBATION OF RABIES IN THE DOG.—The most valuable evidence on this point was published some years ago by the Medical Press Commission, and from its reports we gather that the period of incubation in animals is very uncertain. In many cases it cannot be ascertained with any degree of probability, as animals are frequently wounded by others without any particular notice being taken of the circumstance, and also as frequently without anyone observing the injuries at the time of or after their infliction. Indeed, it is common to hear owners of rabid dogs assert that their dogs have never been from home, or, if abroad, have never left them for a second; that they could not therefore, be bitten without their knowledge, and they were not cognisant of such an occurrence. The evidence of statistics and facts may be useful in fixing an approximate time. La Fosse states that the shortest authenticated period in his experience was seven days, and the longest one hundred and fifty-five days. Roll gives from three to six, and rarely from seven to ten weeks; whilst Blain asserts that the majority of cases occur between the third and seventh week, though some are protracted to three, four, or even a greater number of months. A week was the shortest period he had noticed. Youatt has known instances in which the first symptoms have only become manifest after from five to seven months, and he never knew of a case occurring before seventeen days intervening. Of nine cases which Bénéch could rely upon, the symptoms appeared after the bite in each, at an interval of ninety-five, eighty-eight, thirty-five, twenty-six, twenty-four, twenty-two, eighteen, fifteen, and ten days respectively. In 1867 Renault reported that of sixty-eight dogs inoculated experimentally or bitten the malady was developed in :—

1 from 5th to 10th day	2 from 35th to 40th day	4 from 60th to 65th day
4 " 10th " 15th "	3 " 40th " 50th "	1 " 65th " 70th "
6 " 15th " 20th "	7 " 45th " 50th "	4 " 70th " 75th "
5 " 25th " 30th "	2 " 50th " 55th "	2 " 80th " 90th "
10 " 30th " 35th "	2 " 55th " 60th "	1 " 100th " 118th "

In Saint Cyr's cases of confirmed rabies, 1865, there were only twenty-six the date of whose inoculation could be positively ascertained. In these the latent period was :—

Cases.	Days.	Cases.	Days.	Cases.	Days.
1	16	2	32	2	50
1	18	1	33	2	60
3	21	1	35	1	62
2	24	1	36	1	86
1	30	1	38	2	90
1	31	1	41	2	103-115

Bouley has known instances in which the latent period was twelve days to seven months, though they were rare. It was usually from six to twelve weeks. According to Haubner, in two hundred cases the appearance of the disease within two months was eighty-seven per cent.; three months, sixteen per cent.; four months, one per cent. He mentions an instance in which the incubation period was from seven to eight months, and another in which it was fourteen months. From these statistics and facts it may be seen that nothing can be said with certainty or in a positive manner as to the length of the interval which elapses between the receipt of the injury and the appearance of rabies, and that it is therefore hazardous to say when a dog has been wounded by one that is rabid at what period it may be considered safe from an attack of the disease, as there are no reliable limits to this latent period.

—*Land and Water.*

RECOVERY FROM RABIES.—On more than one ground the possibility of the recovery of dogs from attacks of rabies is of great importance. The demonstration that this terrible disease is not invariably fatal, even in the animals most prone to it, may at least be welcomed as affording a ray of hope for therapeutics, while the fact of the recovery of the affected animals may afford an explanation of many mysterious outbreaks of the disease. M. Decroix lately communicated to the Academie de Medecine nine cases which he had collected of well-authenticated recovery from rabies. Decroix points out that in furious rabies the attacks increase in frequency and intensity during two or three days, then attain their maximum, and disappear in two or three days more whereas death does not occur until the fifth or sixth day. The rabies commission in France has made a host of experiments with various substances of reputed value in rabies, three of them with pilocarpine, and every supposed remedy which they employed appeared actually to hasten death by the violent paroxysms which it caused. The conclusions of M. Decroix are that it is experimentally demonstrated that rabies may terminate in spontaneous recovery. Up to the present day no agent has made good its claim as a remedy for rabies.

The cases of recovery attributed to this or that agent may be, with equal justice, ascribed to the spontaneous termination of the disease. In absolute quietude and obscurity the paroxysms are far less terrible than when medicines are administered, and M. Decroix asserts that if these conditions could be secured, he would far rather suffer from hydrophobia than from many other diseases. It may however be observed that we are scarcely justified in drawing, from the superior results of therapeutic inactivity in dogs, the same lesson in the case of the disease in man. It is very desirable, in the case of any recovery in rabies, that it should be ascertained at what rate the saliva ceases to be infectious, and whether the disease can be communicated after the animal has to all appearance recovered. This is not an improbable explanation of the occasional alleged occurrence of the disease from the bite of healthy animals.—*London Lancet.*

A CASE OF HYDROPHOBIA TREATED SUCCESSFULLY WITH ACONITE.—Dr. Cullimore, physician to the Northwest London Hospital reports, a case successfully cured with aconite. The treatment, after placing the patient in a quiet and secluded corner, consisted of a dietary of milk thickened with arrowroot and beef, with the following mixture: one minim of the tincture of aconite, six grains of bromide of potassium, six minims of the tincture of cinchona, to half an ounce of water, to be taken every half hour for twelve doses, and then three times a day.

INTERESTING TO VETERINARY DISSECTORS.—*Semper's Method of Making Anatomical Preparations.*—Dr. Semper has discovered a method of making anatomical preparations which assures the preservation of the several organs. He reports the result of his work in the British Medical Journal. He has used the method constantly for several years, and the results are said to be excellent. After the dissection is made, it is macerated from one to five days, according to its proportions, in weak chromic acid (one to two per hundred), it is then washed, and treated with weak alcohol (thirty per hun-

dred), adding alcohol of gradually increased strength. The preparation is then placed in strong alcohol from one to seven or eight days; afterwards in absolute alcohol, and finally is left to macerate in turpentine until it is thoroughly soaked. The preparation is then spread out and allowed to dry by contact with the air, it thus becomes perfectly white. The different organs can be colored by using the best oil colors. When the preparations have been thoroughly dried after their maceration in turpentine, they resume to a great extent their natural coloring if they be immersed in a mixture composed of equal parts of a saturated solution of white sugar and glycerine.

In the same connection we would refer to Dr. Roswell Parks' method of making

FLEXIBLE ANATOMICAL PREPARATION OF JOINTS.—The joint to be prepared should be carefully dissected by aid of maceration so as to remove thoroughly all the soft parts except the ligaments. It may then be bleached by hydrochlorous acid in the following way: a small quantity, four to five grammes, of powdered potassium chlorate is put in a stone jar, and 20 cc. of strong hydrochloric acid poured over it. The jar is then filled with water and the specimens dropped into it. From six to thirty hours in this solution suffice. After still further scraping and cleaning they are finally placed in the following mixture:

Coffee sugar.....	2 parts.
Saltpetre.....	1 "
Methylic alcohol.....	1 "
Glycerine.....	16 "

A little water may be used to assist in the solution of the solids, or a good article of syrup may be substituted for the sugar. A little thymol may also be added with advantage, though it is not necessary it should be dissolved in the alcohol.

In this mixture the specimens are allowed to remain from one to two or even three weeks, according to their size. After removal from it they are allowed to drain for a few days, and then need only a little trimming and scraping before being placed in the cabinet.

INTESTINAL DISORDER IN HORSES.—Most Horsemen have, at some time or other, experienced the annoyance incidental to the possession of a horse which was afflicted with what is commonly termed looseness of the bowels. The derangement does not amount to an attack of diarrhoea, which might be met by appropriate remedies and cured; but, at all sorts of irregular and particularly inconvenient periods, the animal voids a large quantity of dung which is mixed with a good deal of fluid, and generally has an extremely fetid odour. It is commonly remarked of horses which are subject to attacks of looseness of the bowels without any tangible cause, that what they eat seems to go through them without doing them any good; and such animals are seldom in very good condition, but are tucked up and miserable in appearance, and after any active exertion assume a forlorn aspect, which disgusts the owner, and perhaps causes him to use strong language to his groom.

There can be no doubt that in all cases, whatever may be the kind of diet on which the animal is kept, there is an excessive irritability of the mucous membrane of the digestive system.

Occasional attacks of looseness of the bowels under special circumstances, as, for example, the excitement of the chase, indicate a high degree of nervous irritability; but, although rather annoying to the rider, they do not injure the animal, and there is some satisfaction in knowing that nothing can be done in the way of medical or dietetic treatment to mitigate the disorder, so long as the animal is exposed to the excitement on which it depends. It is best, therefore, in such cases, to put up with the inconvenience and let the animal take its chance.

"Looseness" arising from chronic irritability of the lining membrane of the digestive canal is in fact a form of indigestion; and the great portion of the food consumed is, in the peculiar state of the animal, so much indigestible substance, which the stomach and intestines reject as quickly as possible.

By the term "indigestible matter" it is not intended to suggest that the

food is necessarily of bad quality, as the oats, hay, bran, and beans may be quite up to the average, and constitute digestible food for horses whose digestive organs are in good order; but it is clear, from the results of a meal, that such diet in the case of the "washy" horse acts as an irritant, and is not retained long enough for the digestive process to be completed, or even carried to an advanced stage.

Medicine cannot be expected to effect much good in the form of indigestion to which we have referred. All that can be done in the way of cure must be effected by strict attention to diet.

At the commencement of the treatment, a dose of linseed oil will clear out the intestinal canal and get rid of any irritating matters which keep the membrane in an excitable state; and, after the laxative has produced its effect, a perfectly bland, non-irritating diet may be tried and continued for some time, in the hope that the mucous membrane may recover its normal tone. Milk and eggs are most easily obtained, and form, together or separately, a perfectly digestible and highly nutritious kind of food, of which a horse will soon become fond, and which he will take without hesitation. The quantity of the food to be given daily will depend on the horse's condition and appetite. Two quarts of milk, with three or four eggs, three times in the day, will be ample for the support of the system; and if it be intended to attempt a radical cure of the disease, it will be best to keep away all solid food for a time.

Instead of milk and eggs, soup made of coarse pieces of meat may be used, and experience has shown that emaciated animals have improved in condition rapidly on such fare. A total change in the system of dieting will generally be too serious an innovation to be attempted in the owner's stable; and, unless he is an enthusiast on the subject, and determined to carry out the experiment at all hazards, it is not likely to be put in practice at all; but there is no question of the curative value of a dietetic system which consists in the substitution of a non-irritating diet for the food which is in ordinary use.

When the expedient of a total change of diet for the cure of looseness of bowels cannot be tried, there is little to be done beyond regulating the ordinary diet, avoiding beans and green food, and trusting to good old hay, with occasionally linseed mashes, and take special care not to allow the horse to take a large draught of water immediately before eating. To prevent this, it is better to keep water always before the animal. Medicine, we have said, cannot be expected to do much: but, when the ordinary kind of diet is continued, it may be worth while to try the effect of small doses of aloes with gentian and salts of iron. A dose of half a drachm of Barbadoes aloes, with a drachm of powdered gentian and twenty grains of sulphate of iron, may be made into a ball and given once a day for some time, unless a too energetic action on the bowels results, in which case the medicine would be discontinued for a few days. At the best, it must be allowed that horses which are liable to the disease in question are objectionable animals to deal with, and the experience of the most carefully conducted treatment is not encouraging.—*Field*.

COMPARATIVE DIETETICS.—Under this heading, perhaps not happily chosen, I beg to offer you an account of a peculiar case in a dog treated by me. It was a small black-and-tan terrier, and the symptoms were as follows: Great weakness and depression, vomiting and convulsions. The dog had shown all these symptoms except the convulsions for two days when I first saw it. There was a total loss of appetite, and convulsions followed immediately upon any food being introduced into the stomach. There was no diarrhoea, and my diagnosis was that some mechanical irritant had been swallowed. To allay the gastric irritation small doses of hydrocyanic acid were given. To combat the depression a little brandy was mixed with a solution of Brand's essence of beef, and one or two teaspoonfuls given occasionally. Marked improvement followed. The brandy was discontinued and the beef essence used as food. In two days such was the improvement—no return of either convulsions or vomiting—that a little milk was tried, but vomiting was speedily followed, and the essence was resumed. Again the improvement was noticeable, and as the stomach seemed calm a little pounded raw steak

was given. Vomiting returned and before it was ejected a slight convulsion occurred. Being convinced that some irritant remained in the stomach, aperients were resorted to with a hope that it might pass on into the intestines. Emetics were not used, as it was thought that the vomiting already induced would have accomplished any removal which could have been affected by them. The dog died on the eighth day, having been kept alive entirely on the essence of beef, of which it consumed four small tins. A post-mortem examination showed a small phial cork firmly wedged into the pyloric opening of the stomach, effectually preventing anything passing into the intestines. There was nothing else in the organ and no disease of any other part. The interest to me is the fact that not only solid food, but soup, milk and ordinary beef tea caused vomiting and frequently vomiting and convulsions, whilst the essence of beef was followed by neither, but was absorbed directly through the stomach. Since this case I have often used the same article in irritable conditions of the stomach and with the best results. The case, I think, also demonstrates what my practice bears out—that milk, supposed to be a bland and inoffensive article of diet, is very injurious in cases where the mucous membrane of the stomach and intestines is excitable or weak.—*London Lancet.*

THE INFLUENCE OF ANIMAL FOOD ON THE PRODUCTION OF WOOL.—The *Journal de Medecine Veterinaire* for September contains an article by M. P. Regnard on the effects of an animal diet on herbivora, in substitution for the ordinary vegetable provender. The writer remarks at the beginning that numerous attempts have been made to nourish herbivora with animal food, with doubtful success in most cases; but he suggests that the mode of procedure was far from economical, and was, therefore, not likely to be popular.

In spite of the bad results which had attended experiments in alimentation, M. Regnard was led to believe that, if animals were from the time of birth kept on animal diet of a highly azotised kind, the effects on the growth of the tissues must be advantageous; and, in support of the idea, he refers to the fact that in the early periods of their existence all herbivora are purely carnivorous in their feeding, inasmuch as they subsist entirely on the milk of the dam.

Reasoning from the above facts, it was natural to inquire whether there was a possibility of replacing the natural food, the milk of the mother, by some other highly nutritive animal substance; and the investigator at once selected the blood as a substance which could be used economically for the purpose, there being no lack of the material in the abattoirs. Blood in its crude state cannot be used as food for herbivora—in fact, the animals refuse to touch food in which the fluid is mixed; but, after being heated and the clot subjected to pressure, it can be rapidly dried, and then ground to a fine powder, which is free from odor or taste, not prone to decomposition and unaffected by being mixed with any kind of provender.

Experiments with the prepared blood were tried on some lambs in an emaciated state; while, in order to compare the system with the ordinary plan of feeding, other lambs were fed in the usual way. It was found that the animals which were fed on the cooked and dried blood improved much more in condition than did those which took the ordinary diet, and the verdict of the farmers of the district was that such fine lambs of the age had never before been seen. Experiments in the above direction are being tried on calves; and the author suggests that, if they succeed, it is impossible to overrate their economic value, as the feeding of calves for the butcher or for other purposes will no longer necessitate the sacrifice of the milk of the cow, which may be employed in the dairy without detriment to the young animals.

In reference to the influence of cooked and dried blood in the production of wool, M. Regnard gives the results of the feeding of lambs of different breeds, and it would appear that those which were nourished on ordinary food fell far below the others in regard to the weight of their fleeces. Three lambs which were fed in the usual way gave together 555 grammes of wool when shorn, and three of the same age fed on dried blood gave 1060 grammes, or nearly double the quantity.

Whether or not any practical consequences will result from M. Regnard's

experiments, there is no doubt of their scientific value; and, as he remarks, if the system of feeding on dried blood were generally adopted, there would at once be established a remunerative use for the vast quantities of blood which are wasted in the abattoirs. We may add also that, as soon as its value was recognized, blood would cease to be a waste material, and would command its full value in the market.

INDUCED PREDISPOSITION TO ANTHRAX.—The temperature most favorable to the development of the bacteria of anthrax is that of the mammalia—i. e., a temperature of 37° or 38° C. Birds and especially fowls, which have a higher temperature (42°) do not, under ordinary conditions, contract the disease. M. Pasteur, however, as is known, succeeded in communicating the disease to fowls, and in causing the bacteria to develop in their blood by lowering the body heat by means of the immersion of one foot for a considerable time in cold water. In the case of frogs, it was found by M. Gibier that at the ordinary temperature of water they are unaffected by a subcutaneous or intra-peritoneal injection of the liquids of anthrax, and it became important to ascertain whether, by raising the temperature to 37°, and thus render them for a time warm-blooded animals, the bacteria of anthrax would develop in their blood. Experiments, directed to this end, afford at least a partially affirmative answer. By compelling frogs to live in water at a temperature of from 35° to 37° C., M. Gibier succeeded in communicating the disease to them. The experiment does not always succeed, even when the conditions are the same. Of twenty animals the disease was communicated to five only. The others died as soon as they were immersed in warm water, or in the course of three or four days without presenting evidence of injection. Two, moreover, resisted entirely. The blood of the other five, however, presented abundant bacteria, and there were also found in great numbers in the liver. A drop of blood taken from the heart of one and inoculated under the skin of a guinea-pig killed it in forty-eight hours. The bacteria in the frog were remarkable for their length, which was far greater than that of the bacteria of the guinea-pig. This, M. Gibier attributes to the slowness of the bacterian circulation, conjecturing that in the rapidly moving blood of the mammalia the rods may be broken. Some other points were also noticed in the course of these experiments. It was observed that the frogs which proved susceptible had fasted for a longer or shorter time. Young, vigorous, newly-captured frogs either resisted altogether or died at the end of two or three days without any development of bacteria or increase in the size of the liver. Frogs which were suddenly removed from cold to hot water, without any gradual transition, as soon as possible after the inoculation, died more quickly from the disease than did those which had been acclimatized by degrees. Lastly, a curious fact was noted, that none of the frogs which had been previously inoculated in the cold water were affected by a previous inoculation in warm water. This may have been only an accidental coincidence, but it may possibly have a vaccination phenomenon."—*London Lancet*.

ENGLISH VETERINARY NEWS.—The *Gazette*, of November 17, publishes the names of a crowd of officers who are decorated and promoted for service during the late campaign in Egypt, and among them appears the name, for the first time, of an officer of the veterinary department—J. J. Meyrick, Inspecting Veterinary Surgeon. He received the companionship of the Bath (C. B.) and the third class of the Osmanieh—an Egyptian or Turkish distinction.

Veterinary Surgeon F. F. Walker, First Life Guards, with other selected officers and men, attended at Windsor Castle, to receive the Egyptian War Medal from the Queen in person.

On the recommendation of the Director-General of Military Education, a new appointment—that of Veterinary Lecturer—has been added to the staff of the Department of Artillery Studies at Woolwich. First class Veterinary Surgeon J. C. Dwyer, has been selected for the part, the creation of which has been long thought desirable.—*Veterinary Journal*.

NEWS AND MISCELLANY.

TSETSE FLY.—Man, the goat, and the wild carnivora are the only animals capable of resisting the tsetse fly of Africa.

OSTRICH BREEDING.—One good pair of breeding birds, well fed, hatches out a clutch of chickens three or four times in the year, from twelve to twenty chickens in each clutch. All breeding birds are not of course equally good, some will perhaps not produce more than half this number of chickens, but generally such difference arises from their youth, or insufficient feeding; whatever the cause, these birds are always sold for a proportionately lower price.

The period required to incubate the eggs is forty-two days. A few days after one clutch is hatched, they again pair, and the female speedily lays the first egg, continuing to lay every other day until the number is complete; they then commence sitting, the hen occupying the nest, which is merely a hollow scraped out of the ground, from three or four o'clock in the morning, until the same time in the afternoon, when she is relieved by the cock, who takes charge during the night. Should the soil in the camp not be of a sandy nature, it is as well then to place a cartload of sand there, as it makes a better nest than ordinary soil, being more porous and drier.

RATION OF HAY FOR HORSE.—The experiments of Wolff and others, at German experiment stations, show that a horse weighing 1100 to 1200 lbs., would eat from 22 to 27½ lbs. of hay, if no other food was given. With grain, 20 to 25 lbs. was usually eaten by working horses of that weight. Lighter horses would not need quite so much, but we can find no data of experiments with horses weighing less than 1000 lbs.—*Country Gentlemen*.

THE DAILY YIELD OF GOATS' MILK.—The yield of milk from a goat averages about two to three pints per day for seven or eight months in the year, and she gives three or four kids, in two kiddings, to be killed at three to six weeks old, a delicate, choice meat, superior to lamb.

DONATION TO VETERINARY COLLEGE.—A subscription of \$10,000 from Mr. J. B. Lippincott, for the establishment of a veterinary college in connection with the University of Pennsylvania was received by the Trustees of that institution, November 14, 1882.

THE BERLIN VETERINARY MEDICAL SCHOOLS.—The Berlin schools cost more than \$20,000 per year above receipts, with large faculties. Berlin has thirteen professors and a large number of assistants, and is erecting institutes for the study of special branches; the new pathological institute at Berlin is to cost \$50,000; at least such is the appropriation. It is from the work done at these schools that we have learned how to control animal pests, and the nature of most of the diseases of our animals.—*F. S. Billings*.

NORTH-WESTERN VETERINARY COLLEGE.—The prospectus of the second session of this Institution has been received. Dr. Lyford the Principal has wisely insisted from the outset on a high standard, and requires each candidate for the diploma to pass an entrance examination and to spend three winter sessions and one summer session. The College is connected with the Minnesota Medical School, and doubtless the association will be mutually beneficial. Dr. Lyford is an alumnus of McGill University.

PHILADELPHIA VETERINARIANS AND DISHONEST DRUGGISTS.—It seems that the "City of Brotherly Love" still harbors some dishonest compounders

of drugs, and that the *Press* has undertaken to rebuke the profession for the short-comings of its unworthy members. A certain C. B. Henry, of 1537 Bertram Street, prescribed the following :

"FOR MR. BYERLY'S DOG.

R Quinine Sulph. 1 drachm.
 Acid Sulph. dil. q. s.
 Aqua. 4 drachms

Mix. 20 drops as directed."

The prescription was sent to apothecary F. Pleibel, who, it is asserted, substituted the cheaper sulphate of cinchonidia for the sulphate of quinine ordered. Whether "Mr. Byerly's Dog" first discovered the cheat, or whether some employe of the *Press* assumed the role of public guardian, is not stated.

In like manner the same C. B. Henry, V. S., prescribed two drachms of Boracic Acid, and druggist Charles H. Gmelin of Third and Poplar Streets substituted Borax therefor.—*Sanitary Engineer*.

BLOODPOISONING.—Our animal-trainers are apt to be careful hereafter how, in seeking to save the cost of pumice-stone soap or sand-paper, they wash their faces by rubbing them against the hide of an elephant. Professor Arstingstall nestled his countenance against the trunk of the elephant Chief in Bridgeport, Ct., one day last week, and now his skin shows an eruption that physicians regard as a bad case of poisoning.—*Clipper*.

POISONING BY ARSENIC.—From experiments on eight dogs. Dr. E. Ludwig concludes that in all cases, whether of acute or chronic poisoning, the liver is the organ richest in arsenic. The liver was found to contain nearly seventeen times as much of the poison as the brain. To this the observations on men poisoned by arsenic lent strength. In a typical case of acute poisoning the brain contained 100 grammes, 0.00004 gramme; the liver, per 100 grammes, 0.00338 gramme of arsenic. It would, therefore appear that the liver, is the best part to examine in judicial cases.

A CAT'S ATTEMPT AT SUICIDE.—A strange incident occurred on the dock adjoining the Staten Island ferry slip. An old cat belonging to Mr. Stephens, the Secretary of the Staten Island Ferry Company, was observed standing at the edge of the dock, when she suddenly plunged into the water. A Police officer went to the rescue of the cat and landed it safely. The officer believes that the cat intended to drown itself. It is twelve years old, and has of late been quite infirm, being partially paralyzed. After it had been rescued the cat was looked up in a safe place, where it will have no facilities for making another rash attempt upon its own life.

WHAT IS CRUELTY TO A CAT.—The trial of Hugh Devlin for cruelty to a cat called forth interesting medical testimony at Providence on Tuesday. Devlin had confessed that, having been annoyed by a huge tom-cat, he had chucked it alive under the ground, not wantonly, but because he thought that the surest and most merciful way to take the animal's nine lives. The agent of the Humane Society contended that Devlin had done a cruel, wanton deed, but physicians testified for the defence that death by suffocation under ground was for any animal as easy and painless as death by drowning. The popular horror of being buried alive had its origin, not in experience, but in the imagination, which pictured such a fate as terrible. Whatever Devlin's intent, he had caused the cat no more death agony than if he had followed the orthodox method and drowned it. Possibly, said one physician, the cat lived longer by three respirations than it would have done under water. Devlin was found not guilty of cruelty to a cat.—*Springfield Republican*.

OVERFED PIGS.—When young pigs are sick it may be pretty certainly understood that they have been overfed. The general treatment of pigs seemed to be based upon the idea that they are naturally greedy and gluttonous animals, and that this habit should be encouraged as much as possible. Hence all the diseases which so frequently effect pigs. When young, a pig is a tender animal, with a stomach not much larger than that of an infant about as old, and yet the people will cram the little creature

with sour slop, grease, milk, and corn-meal until it can swallow no more. And when the pig is sick one wonders what is the matter. We do not feed lambs or calves, or colts, in that fashion, hence these are rarely diseased. Cough and difficulty of breathing is caused by indigestion, and the common disease of which partial paralysis of the hind parts is the chief symptom, and which is cerebro-spinal meningitis, is caused by indigestion and malnutrition, which cause disturbance of the circulation and congestion on the brain and spinal marrow, with loss of nervous power. The treatment is to give a dose of salts and one scruple of saltpeter daily afterward, and feed very sparingly.—*Dublin Farmers' Gazette*.

"A COW AS IS A COW."—Hon. Harrison Bailey owns a cow which, in the last four years, has dropped nine calves, three of them the present year, and of course is highly valued. A few nights ago she got into a cornfield and filled herself so full of the provender there that she was unable to rise when she laid down, and nothing short of her death was expected until a neighbor came along, and undertook to relieve her by plunging a butcher-knife into her flank just in front of the hip bone. This failed to have the desired effect, and another neighbor proposed to enlarge the hole made by the knife and remove the food. To this the owner would not consent until convinced that she would die any way, and then the experiment was tried, and fully six bushels of undigested corn, cornstalks and grass, in a state of fermentation, was removed from her paunch. The opening was then closed, and in a very short time the animal was on her feet and as contentedly chewing her cud as if nothing unusual had happened, and is to-day as well as any other cow on the place.—*Shelbyville (Ky.) Sentinel*.

PARASITES IN STOCK.—In the spring, when the enemies are more or less troublesome, take common bar or soft soap, heat with a little water till melted, then add carbolic acid crystals in the proportion of one ounce to each pound of soap. Before adding the crystals to the soap, they are to be dissolved by removing the cork and setting the bottle in warm water. When the mixture is cool, make a strong suds by mixing in a pailful of warm water about 1½ lb. of the preparation; wash the infected animals with the suds. If the first application does not effect a cure try a second, and a third, with five days' intervals. It will not take off the hair, but it will take off all insects and will cure mange, or other skin diseases.

INTERNATIONAL VETERINARY CONGRESS.—Mr. Fleming, Army Veterinary Inspector, has been appointed by the Organizing Committee of the International Congress, which meets at Brussels next year, to prepare a report on association with Mr. Lydten, Superior Veterinary Surgeon to the Grand Duchy of Baden, on tuberculosis, from a pathological and sanitary point of view; the report is to serve as a basis for the discussion which is to take place on this malady.—*London Veterinary Journal*.

CATTLE QUARANTINE STATIONS.—With regard to the selection of sites for quarantining imported cattle for ninety days from date of shipment in Europe, we note the following statements:

At Portland, Me., grounds have already been selected, and buildings thereon are in readiness to receive a limited number of cattle, but the government has not as yet begun the erection of its stables. Near Baltimore a place close to the intersection of the Baltimore & Ohio and the Baltimore & Potomac railroads, nine miles from the city, has been chosen. About twenty acres on high and well drained ground will probably be inclosed and buildings put up as soon as possible after the necessary formalities are gone through with.

The Commission has notified Collector Robinson of New York, that it has selected a site at Paterson, N. J., for the establishment of a cattle quarantine station. The ground that has been chosen can be completely isolated at will. One of the chief reasons which led to its selection is the fact that it can be reached either by land or by water. Many importers would prefer to have their cattle transported to quarantine by water, as it is believed that choice

stock may often be injured by being carried in the cars. The United States government owns land at Sandy Hook which could be used as a quarantine without the payment of ground rent. Fresh water can be had there for cattle by sinking wells twelve feet deep. The Commissioners decided against Sandy Hook because of its distance from the city. The cattle would have to be taken from the steamship in barges to the Hook, and this would be difficult in rough weather, for the barges would be in danger of swamping.

It is not likely that a station will be immediately established at Philadelphia, but it is not unlikely that the interests of the South will be considered, and a station in New-Orleans be built. At each port where cattle from abroad may be landed the collector of customs will take charge of the stock, and it will remain under his care until the agent of the cattle commission shall have provided clean box cars for its transportation from the dock to the quarantine station. The commission will then receive the stock, and, without allowing it to come in contact with any other cattle, or with material of any kind which can have by any means become infected, will take it to the quarantine grounds, where it will remain for the prescribed period under the constant supervision of veterinarians of approved skill.

The government will furnish only shelter and water, the owners will have to provide for the care and feeding of the cattle.

EXPORTS AND IMPORTERS AND QUARANTINE OF NEAT CATTLE.—The number of live cattle exported, chiefly to Great Britain for the year ending June 30, 1881, was 185, 707, valued at \$14,304,103. For the year ended June 30, 1882, the number was 198,110, a decrease of 77,597, and in value of \$6,503,876. The decrease was, however, no greater in proportion than that generally in the exportation of articles of food. By an order of the Privy Council of Great Britain of February, 1879, all cattle imported from the United States must be slaughtered at the port of arrival within ten days. This order, deemed necessary to prevent infection, will, no doubt, be rescinded whenever the United States adopt measures rendering it reasonably certain that importations of cattle from this country will not introduce the disease from which the people of Great Britain have heretofore suffered loss. Under a recent appropriation the Treasury Department, through the Cattle Commission, are arranging with the various railroad companies for the transportation of cattle from the Western States to the sea-board so as to save them from contagion on the route. When these arrangements are perfected and found efficient we may fairly ask of Great Britain that the order for immediate slaughter of American cattle imported into that country be rescinded. The report of the commission speaks in detail on the subject.

LEGISLATION REGARDING NEAT CATTLE.—"Legislation on these subjects," says the Secretary of the Treasury in this report, has two objects: First, the extinction and prevention in the United States of the disease known as pleuropneumonia or lung plague; second; the increase of our commerce in neat cattle with other nations, especially Great Britain. The disease did not begin in this country, the first cases having been traced to foreign origin. It is found on the Atlantic coast in several places from New York to Baltimore, but has not been felt in New England for many years. It is a contagious disease, of malignant type, likely to spread through herd to herd. Mindful that the number of neat cattle in the United States in 1880 was about 36,000,000, which, at \$25 per head, would be valued at \$900,000,000, and that there has probably been increase rather than decrease, it is seen that this is a matter of moment. The spread of the disease on the Atlantic coast alone would make serious loss, though it is more readily controlled where cattle are penned or housed. The starting and spread of it in the great open cattle ranches of the West would be calamitous."

TYPHOID FEVER AMONG LIVE STOCK.—Considerable excitement a short time ago created among the owners of cattle in North Hudson County, N. J., by the death of several cows belonging to A. Lieberman. The latter is a dairyman who owned ninety milch cows. Disease broke out in the herd on

Thursday, and twenty-two of them have since died. Two horses that were similarly affected have also died, and three others are hopelessly sick. Mr. Lieberman's first suspicion was that some malicious neighbor had poisoned them, but a post mortem examination of one of the carcasses made by a veterinary surgeon named Chambon showed that death resulted from typhoid fever. Dr. Saltonstahl, the County Health Inspector, when applied to for information concerning the matter, refused to give any, for the reason, probably, that he knew nothing about it. Dr. Benjamin, the Health Inspector of Jersey City, took active steps to prevent the sale of the milk from the dairy in Jersey City. Mr. Lieberman pastured his cattle on the Vreeland farm, which borders on Penn Horn Creek.

SPECIMEN VETERINARIAN.—*What might be a Chapter from Dickens.* Denis O'Neil bought a horse from John H. Whitson & Son, 210 East Twenty-fourth Street, New York, for \$160. The horse died and in the Circuit Court, Part I., this morning, O'Neil sued to recover \$200 damages.

Plaintiff said that the defendants represented the horse as sound, kind and true, and that on that representation he bought the horse. On getting him home to Brooklyn, he would not eat and could not work, though he continued to look well. Plaintiff took the horse back and asked Mr. Whitson to exchange. Mr. Whitson said that, if they exchanged it, they would give him another one as bad, and told him to take horse back and doctor him. The plaintiff called a veterinary surgeon and the horse died.

In cross examination the plaintiff said the horse walked naturally and he liked him as well as when he bought him. When he took the horse back to Mr. Whitson, he looked at him and said: "He is sick." The blacksmith who shod him said that sometimes, when a horse changed his stable, he went off his feed for a time, and that was the reason why the plaintiff did not return him sooner.

Mr. John Skevington, of 1,820 Fulton Street, was examined by the counsel for the plaintiff.

Q. What is your profession? A. I am a veterinary surgeon, have been all my days, which I am fifty-five—least ways 25 years of it, and born in it, so to say, from childhood.

Q. What kind of a horse was this? A. Generally a very useful looking horse to look at, somewhere about eight years and fifteen hands and a quarter which is a hinch.

Q. What was the color of the horse? A. A kind of dapple gray—not white or gray—a mixed color, anyway say gray.

Q. When you examined the horse what did you find? A. No. sooner does I see him as I open the gate, leastways a barn, it was, I knew. I goes and I looks and I searches him, and when I opens his mouth it comes down and all through the system—ulcerated lungs. Call it what you like.

Q. Was the horse suffering from a long continued sickness? A. I should say by my own practise that the discharge was a considerable time. The flesh was flabby and nice and so beautiful. What they feed on most when it's this sickness is mostly nothing but their own corruption. Its a curious case to me.

Q. How long had the horse been sick—three or four days? A. Three or four days! Three or four months, might be two years.

Q. How many visits did you pay the horse? A. Three and three is six—eight.

Q. What did you charge? A. Two dollars a visit, but being a industrious gentleman as works hard, I lumped the whole—\$10.

By the defense—How old was the horse? A. Somewheres from eight to nine years in my judgment. He stood fifteen and one hinch, a very useful looking animal, very nice. Just such a horse as I should choose, but, by Jingo! I never smelt sich.

Q. What did you do to discover the horse's condition? I guided him all over, searched him to see what was there. He was weak as a cat, but fresh as a mole.

Q. Would a horse in such a condition refuse food? A. Some-

times he'll heat hall he can get, and sometimes nothing you can give him. They live on their own corruption and get fat as (say) a pig itself.

By the defense—Could a horse in such a condition be driven? A. He might go a little way but it comes down green and a pinkish color in the nostrils.

Q. In such a condition, was a horse likely to be hearty and sleek in appearance? A. He couldn't be 'earty, but he'd look nice, so nice you'd like him yourself.

By the plaintiff—Can you tell whether the horse had been doctored? A. He had been drugged, for whot can't say, but somethink o' that.

Michael Ford, a stalwart blacksmith, went with the plaintiff to buy the horse.

Q. What did you think of the horse? A. I know nothing about a horse's insides, but about a horse's foot, I was brought up on that and knows what it is.

As the action was improperly brought, the court allowed the plaintiff to withdraw a juror and go to Special Term to amend his complaint.—*Brooklyn Eagle.*

THE JOURNAL

OF

COMPARATIVE MEDICINE AND SURGERY.

VOL. IV.

APRIL, 1883.

No. 2.

ORIGINAL COMMUNICATIONS.

ART. VIII.—ACUTE PARENCHYMATOUS DEGENERATION OF THE KIDNEYS.

BY WILLIAM HENRY PORTER, M.D.,

Associate Professor of Normal and Pathological Histology at the New York Post Graduate Medical School, Professor of Surgical Pathology and General Surgery at the Columbia Veterinary College, Curator of the Presbyterian Hospital Museum, Etc., Etc.

A PARENCHYMATOUS degeneration of the kidney is a morbid condition which every veterinarian should be familiar with, and be able to recognize in its early stage.

In this brief article it will be impossible to consider the subject in full, but the object is rather to make the leading points of this disease prominent so that an early and accurate diagnosis can be made.

First, what are the leading features of the lesion? It is characterized by a marked alteration in the epithelial elements of the renal glands, but no appreciable change in their blood vessel or interstitial tissue.

Etiology.—This form of change is met with in human medicine in connection with, or as a complication of, several diseases, which are accompanied by a long continued elevation of body temperature, namely, pneumonia, typhus, typhoid and yellow fever, puerperal fever, scarlet fever and diphtheria, bad cases of

cholera, acute yellow atrophy of the liver, and is also the result of arsenic and phosphorous poisoning, and some cases are said to develop without any appreciable cause.

By carefully considering this list of diseases you will readily see that it comprises those which must have had some original poison as the exciting cause, and one which of necessity would interfere greatly with the normal physiological tissue metamorphosis; consequently we have in the blood to be eliminated both the original poison and varying quantities of the products of incomplete tissue transformation. I believe these incomplete products are either the result of diminished or increased physiological activity, or both, probably, more correctly speaking, diminished in reference to perfection, but increased both in rapidity and quantity. The result of such a change necessarily produces great irritation to the whole system, and by the combined action of the original poison and the effete material circulating in the blood, we have produced the phenomena known as elevation of temperature.

Having this undue amount of deleterious material in the system, and the kidneys together being one of the great eliminating organs, they make an attempt to free the system of these irritating materials and the result is, that the renal epithelial protoplasm becomes unduly irritated, swollen, and finally filled with minute particles of these irritating substances, which ultimately destroys the vital properties of the cell protoplasm, and if continued long enough will cause them to undergo a fatty transformation. As the disease advances the epithelium steadily degenerates, and finally may loose its hold upon the basement substance and is swept off by the current of urine from above and appearing in the urine is known as cast matter or casts. The result of this change will be that we have the tubes in the kidney not lined by epithelium, but having for their walls the remaining basement membrane. I am inclined to believe that this form of disease is not a truly inflammatory process, but one due to the primary and continued irritation of the above mentioned excretory products. Just what the chemical nature of the products may be is a matter yet to be settled.

At this point the question may rise what are casts? There are two principal types, the blood and hyaline, and in connection

with the latter there is a large modification as may be seen by a single glance at the following table :

CASTS.	{	BLOODY.	{	Hyaline.	
				Epithelial.	
				Nucleated.	
		<i>Small.</i>		Finely granular.	
				Coarsely granular.	
					Fatty.
					Tubular.
					Cork screw.
	{	HYALINE TYPE.	{	Hyaline.	
				Epithelial.	
		Nucleated.			
<i>Large.</i>		Finely grnnular.			
		Coarsely granular.			
				Fatty.	
				Tubular.	
				Cork screw.	

The blood cast is simple, and easily understood. It is produced by an exudation of all the constituents of the blood, and a matting together and an entanglement of the blood corpuscles by fibrin elements in the lumen of the uriniferous tubules, so that they are discharged from the tubes in masses representing perfect casts of the same, and are found in the urine as little plugs of blood corpuscles with parallel sides and rounded ends.

The hyaline cast is not so well understood, but it is generally accepted that a peculiar gelatinous substance is thrown out into the uriniferous tubule, and if discharged from the same independent the epithelium is known as a hyaline cast, but with attached epithelium in various stages of retrograde change, produces the various forms above tabulated.

By an epithelial cast is meant one in which the epithelium has adhered to this hyaline plug and been separated from the basement membrane while still retaining the appearance of epithelium.

The nucleated is where the protoplasm has been obliterated, and only the nuclei can be recognized adhering to the hyaline substance.

The fine granular is where the protoplasm and nuclei are obscured or replaced by fine granular particles.

The coarse granular is where protoplasm and nuclei are obscured or replaced by coarse granular particles.

The fatty is where the epithelial element are replaced by large or small fat droplets.

The tubular is a rare variety, and is formed by a plug of hyaline matter in the lumen and a thin ensheathing layer of the same behind the epithelium, and in this manner the epithelium is separated and discharged, and presents itself under the microscope as a perfect ring of epithelial elements. The size of the cast will vary with the original size of the tube, and the amount of degeneration and dilatation of the same. The distinguishing characters of casts are their parallel sides and rounded ends.

In rare and exceptional cases there is twisting of the body of the cast, so that it resembles the spiral of a corkscrew. Prof. T. E. Satterthwaite first called my attention to this peculiar variety, and I will say at this point that we have sections of kidneys that show a peculiar spiral arrangement of the tubes, which easily accounts for this strange form of casts.

The waxy cast of some writers is not included in this table, as its existence is extremely doubtful and probably never occurs.

By the size of the casts we are, in a measure, enabled to determine the stage of the disease. If they are small it is the early part, if they are large it represents a later period. The early stage may be subdivided into two. In the first there will be small hyaline, epithelial and nucleated; in the second fine and coarsely granular and possibly fatty casts, all of the small type. Large hyaline, epithelial and nucleated casts indicate great primary severity. Large granular and fatty represent an advanced state of the lesion.

Pathological Changes.—If one of these kidneys be examined in the early stage it will be about normal in size, the capsule normal in thickness, non-adherent to the underlying renal tissue, which is left perfectly smooth after its enucleation from the capsule. The cut surface will present no marked appearances by which this lesion can be readily recognized by the naked eye. But when examined under the microscope the following changes will be found. The epithelium will present a cloudy, mucoid or freely granular appearance. The cells will be swollen and the lumen of the tubules occluded, and in the early stage, where there is rapid swelling of the epithelium with

but little or no expansion of the capsule, the tubules will be tortuous. Later in the change the cut surface will appear paler than usual and the pyramids less distinct, and now the kidney will probably be larger and softer than normal. Under the microscope the granular degeneration of the cells is very well marked. Desquamating masses of cells, precisely like the casts found in the urine, are present in the tubes, and some of the tubes have completely lost their epithelial lining. This rapid desquamation and stripping of the tubes is especially marked in this form of disease occurring in the horse. There is usually greater softening of the horse's kidney than of the human, so that in some cases it becomes almost gelatinous. In other cases there is marked congestion of the kidney and a deposition of blood pigment in the intertubular spaces, and in some of the cases the kidney will remain quite firm.

Symptoms.—These are somewhat different in man and animals, in man occurring as they do in connection with severe disease, or as the result of some metallic poison, the symptoms are not often well marked at first. There may be a little cedema of the cellular tissue just under the inferior eyelids, or of the feet, which will first attract attention. This statement is especially true in arsenical poisoning of the chronic variety. But in connection with the severe diseases the scanty and high colored urine will lead to a critical examination of the same, and the finding of albumen and cast, common to this variety of lesion, will of necessity establish the diagnosis of paranchymatous degeneration of the kidneys, and indicates great intensity of the original disease.

But in equine practice this form of disease seems most frequently to occur after a period of rest, followed by active exercise, and as a result the sudden development of a weakness or partial paralysis of the posterior extremities, often increasing to a degree of total disability. At this time the animal gives evidence of a moderate chill, and falls into a profuse perspiration. As the disease advances the urine becomes more scanty. A strong urinous odor may be detected emanating from the animal, convulsions set in, which rapidly pass on to coma and death.

If the urine is carefully examined in such cases it will be found

to contain large quantities of albumen and casts of the varying kinds above described, namely epithelial, nucleated, fine or coarsely granular, more frequently, however, the two latter, and larger masses of granular debris. The urine of the horse will have an alkaline reaction and a specific gravity above normal, perhaps as high as 1.030.

To test for albumen in the urine it must first be filtered, to remove the large amount of thick, tenacious mucus. This having been accomplished the filtrate is boiled, and a little acetic acid added to render the urine acid, as albumen is not precipitated in alkaline solutions; if a precipitate is produced which is not redissolved upon the application of a moderate quantity of nitric acid, but becomes more marked, then albumen is present. This, perhaps, is the most ready and practical test, and if pains are taken to look through the specimen in the test tube against a black background, as the sleeve of a coat, or a hat, or book, it proves a delicate and sure test. There are numerous other tests by which this can be confirmed, and as they are more troublesome and not so practical it seems hardly necessary to mention them in detail, but they will be found in the case department in connection with the case reported by Dr. Walton.

The casts, of course, can only be determined by the aid of the microscope.

With such rational and urinary symptoms as these the diagnosis becomes both easy and positive.

It is hard, however, to explain the accompanying paraplegia, and at one time it seemed quite rational to look upon the paralysis as due to a lesion of the cord which preceded that of the kidney. But the more the symptoms and lesions of the kidney are studied the more reasonable it seems to place the kidney lesion first and the paralysis as secondary, but why paraplegia should occur is at present hard to understand.

The cause of the renal degeneration seems to be due to the attempt on the part of nature to free the system of effete material, which probably is produced by the sudden activity after a period of rest. It may be that this causes the renal trouble, and the unexpected strain of active exercise after a period of rest affects the cord at about the same time, and that

the two develop simultaneously, but are due to independent causes, and this concomitant paralysis may be a factor in making the renal lesion so grave.

These points which have been raised are those which every Veterinarian should investigate closely and record and publish until something more positive can be elucidated.

The term Azoturea is one that should be discarded as meaningless, for it has not been explained what is meant by it. To be sure the definition "nitrogenous urine," and "hyper-nitrogenous blood" has been applied to it, but fails to say whether it means that pure nitrogen gas is in the blood and urine, a rather absurd supposition, or an increased amount of albumen or of urea, and until it is positively stated which is meant, and some quantitative analysis appended to settle these points in question, it must of necessity remain in its present meaningless position.

Treatment.—This, of course, is to be based upon one grand principle, and that is to relieve the kidneys as much as possible, and also rid the system rapidly and easily of all effete and irritating substances. This can be accomplished in a measure by free purgation and diaphoretics, among which the sulphate of pilocarpine hypodermically injected stands first among the list of diaphoretics and eleterium first among the cathartics. The kidneys should not be neglected, but be kept at work by non-irritating diuretics, so that what epithelium remains sound may aid in freeing the system and yet be as little irritated as possible, and also to keep the degenerating epithelial elements from blocking the tubules, and thus damming back the urine. This can be accomplished by large draughts of water, digitalis, with heat and stimulation to the loins. In this way a larger quantity of water passes through the kidneys and thus diminishes the density of the fluid, and relieves as much as possible the irritation of the effete material. Nitrate of potash should never be given in such cases, as it acts in directly the opposite direction, and is simply adding fuel to the fire, and will almost inevitably cause death. It seems quite reasonable to consider the constant and free use of this salt in veterinary practice as one grand cause in weakening the kidneys and rendering these renal lesions so

common. Tonics and the most easily digested foods should not be forgotten.

From close observation one can easily satisfy himself that as a general rule what is deleterious to man is very apt to be in the animal kingdom, even though there are some exceptions.

ART. IX.—THE EXTENT TO WHICH ANIMAL FORMS UNDERGO CHANGE.

BY C. M. O'LEARY, M.D., LL.D.

IT has lately, and with apparently good reason, become the fashion for magazines, instead of confining themselves to the exposition of a distinct set of views, to devote themselves to the dissemination of diverse and even opposite notions touching similar matters in the hope that from the clash of opinions the spark of truth may be struck. It is in this spirit that the writer has turned his attention to an article from the pen of Dr. Hubbard W. Mitchell, which appeared in the January number of the JOURNAL. The article in question possesses the undeniable merit of lucidity, and the reader who is anxious to obtain a rapid and brief summary of the most advanced stage of the doctrine of evolution may find it here. I consider, however, that Dr. Mitchell has adopted some extreme opinions without having thoroughly sifted the arguments on which they rest or considered the consequences to which they lead. I will mention two instances in which this seems to me to have occurred. Considering the aptitude which certain atoms possess to combine with others, and the number of specifically different substances that thence arise, the Doctor has formulated a theory to the following effect: If C^4 , H^2 , O . combine to form ether, which, by the addition of H , O ., is converted into alcohol, (C^4 , H^6 , O^2 .) why should not these same elements separately and in the same proportions, or united and in different proportions, or separately and in different proportions, go to form the basis of organic life? If an analysis of organized substances gives as a result elementary bodies through

the agency of chemical force why should not this same force effect a synthesis of the same elements and give us organized substances endowed with vitality. Very briefly stated this is the theory of Dr. Mitchell. He maintains not only the possible but the actual transition of non-living, inorganic substances to living and organic substances through the operation of chemical force. I would in the first place remark that Dr. Mitchell does not adduce a single argument in support of his position and yet he holds to it as a theory advanced by himself. Logic requires that a hypothesis be supported at least by the necessity of the facts which it is invoked by its author to explain, yet such necessity is not even adverted to here. In the next place I contend that the facts all point in the opposite direction and that the so-called spontaneous origin of organic life is a hypothesis plainly at variance with the results of experience and observation. Not only has chemistry failed to produce a living organism from any and every conceivable combination of elementary substances, but the records of biology constantly prove the truth of the dictum *omne vivum ex vivo*. And reason corroborates the statement, for it is plain that we destroy or eliminate a form called life when we analyse, and that in synthesis we only combine dead forms which can give in the aggregate nothing which they did not contain either potentially or actually in their elementary condition *nemo dat quod non habet*. Now we see nothing resembling vital force in chemical combinations, while we can account for all their varied phenomena by a reference to the elements from which they sprang. The doctrine of abiogenesis is generally rejected to-day, especially since Prof. Tyndall's experiments have proved the impossibility of the transition of inorganic matter into vitalized organic substance, experiments which led him to the abandonment of the theory of spontaneous generation. More lately the interesting experiments conducted by Pasteur, Schwann and Schroeder, and which have led to the marvellous innovation in surgery, known as "Listerism," prove convincingly that all living organisms must spring from a germ either actually or potentially endowed with vitality. These experimenters have been untiring in their efforts to show that a germ alone, itself the product of

vital action, can develop life, and their conclusions have led to practical results of the utmost value.

Schwann has proved that after the fertilizing powers of organic substances had been removed they remained unaffected by pure oxygen devoid of vitalized germs. The theory that organic life was due to gases commingled with the air succumbed to the facts established by these investigators. Thus organic fluids which had been filtered through cottonwood by Schroeder and Dusch were preserved for an indefinite period of time in the presence of heated air, *i. e.*, air from which vital germs had been excluded. With regard to wounds, the labors of Guerin have proved that it was useless to exclude merely the air since it *per se* had no effect upon putrefaction, but that something in the air, organized and endowed with a potential vitality, had to be excluded. The abiogenetic theory dates back to Aristotle, who held precisely the same views as Dr. Mitchell, though not couched in the same scientific formulæ. Harvey adopted the opinion of Aristotle and held that "equivocal generation" or production of living substances out of non-living matter can alone account for the existence and operation of vital force. We know that the immense majority of plants and animals take their origin in actually vital germs and the whole course of modern inquiry tends to the establishment of the law that out of chemical elements alone no living substance can proceed. The facts of fermentation especially point to this conclusion. The *Schizomycetes*, improperly called *Bacteria*, are the micro organism to whose presence fermentation is due. If by artificial means we exclude this germinating element fermentation either does not take place or is arrested. These multiply according to the special law governing the class of cells to which they belong. As they multiply they require new pabulum, which they readily obtain if deposited in a suitable medium, but as speedily die out when not thus congenially situated. We thus have alcoholic, butyric, lactic and putrefactive fermentation which never can take place in the mere presence of the chemical components of the *Schizomycetes*, but requires for its inception and continuance the presence of the vital germ itself. Dr. Mitchell, it is true, does not assert that this process of evolution from inorganic elements into living tissues takes

place now, but he endeavors to account for the existence of the first vitalized cell in this manner. Time, however, is an accidental circumstance and vitality an essential one, and certainly what cannot take place now could not have taken place myriads of centuries ago without a breach of the laws to which the physical universe is subject. Once this mysterious life force admitted how powerful becomes its operation! Chemical elements are readily appropriated and assimilated by it and made to share its vitalizing influence. It is the alembic wherein the crude materials out of which the universe is built, are brought together, duly commingled and lifted up to the high plane of living organic structures. It is the breath that vivifies inert masses and can no more be the outcome of organic elements than heat and light can emanate from the chaos of dead worlds. It is not only an assumption therefore to state that the protoplasm of cell life is the result of the agency of chemical forces, but the statement is so far adverse to the facts and opposed to the drift of scientific research.

I come now to the second point wherein it appears to me Dr. Mitchell has transcended the domain of facts. It is true he has the authority of Darwin and Wallace together with the whole school of advanced evolutionists to sustain him in the position he has taken, but there are many grave authors who will not subscribe to the doctrine of a primordial pangenetic protoplasm. Dr. Mitchell writes: "If our theory is correct, that the cell acquired its vitality or life through chemical force, the first step is made plain and we can now go on and follow the law of evolution from the first dawn of life upon the earth through all its manifold and successive changes, tracing step by step living forms as they proceed to a higher and still higher form until we reach that level upon which we ourselves stand in the full enjoyment of a completely developed organization, animated and controlled by a perfect brain." I have quoted the Doctor's words at length in order that the strictures I am about to make may be seen to have a direct reference to his views.

According to Dr. Mitchell all living structures had their origin in a homogeneous protoplasm which became organized and specialized through heterogeneity. The law of natural

selection is invoked to sustain this view and the simplicity and efficiency of the law in many interesting cases lends color to its supposed adequacy to account for the transmutation of species. Now the law of natural selection is not competent to explain all the facts for the explanation of which it is invoked and notably, this is the case with reference to many incipient structures, as has been proved by St. George Mivart in his treatise "On the Genesis of Species." If the long neck of the giraffe were the result of necessity, why should not the other ungulata of South Africa have been similarly favored as having been exposed to similar conditions? Yet when the giraffe feasted on the foliage of tall trees its congeners perished by hundreds for want of a suitable surface vegetation. Here the law of selection is grievously at fault and we must seek elsewhere for the structural peculiarity of this animal than in the doctrine of progressive variation. Like difficulties present themselves when we study the remarkable phenomena of mimicry, or look at the heads of certain flat fishes and consider the origin and constancy of the vertebrate limbs. The more deeply we ponder over these facts the more apparent becomes the inadequacy of Darwin's theory to account for the preservation and intensification of incipient specific and generic characters. And yet it is only through the application of the law of natural selection to structures presenting such characters that we can admit the evolution of animal forms from a lower to a higher type. Moreover such progressive evolution is opposed to the stability and reality of species and leads to that most unscientific doctrine the transmutation of species. M. A. De Quatrefages, than who there is no higher authority in zoology, has thoroughly established fact of the reality of species, and we have but to reflect a moment over the peculiar characters of hybridism and mongrelism to become convinced that species is not an artificial and conventional grouping. Mere morphological peculiarities, however marked, are not sufficient to constitute an essential difference between individuals. We must turn our attention, moreover to the facts of physiology and filiation. It is true that more notable differences in point of form prevail between nearly correleated individuals than between those which profound differences separate. Among dogs and pigeons this is

evident at a glance and yet the closeness of specific connection between any and all individuals of these two families is established by the fertility of their mongrel breed. The greyhound and the pug, however, morphologically distinct give birth to an offspring even more fruitful than the parents and thereby prove their physiological unity. How different the case is with the horse and the ass, which present numerous points of close morphological similarity. The mule was known to the Israelites in the very earliest times as well as to the Greeks of the Homeric period and yet he remains sterile and unchanged up to the present time. Now if there existed a change of type in specific characters, surely such tendency would have manifested itself in this case long before now. The *Titires* and *Musmons*, the products respectively of crossings between the he-goat and the sheep and the ram with the she-goat were so designated by the Romans and continue to exhibit the same immutability to the present day. Buffon and Daubenson often strove to reproduce titires and musmons, but their efforts were unavailing and we may hence logically conclude that these animals are crystalized in their characters and incapable of change.

The chief difficulty in the way of the acceptance of organic evolution, as predicted by Darwin and Wallace, arises from the undue importance it attaches to morphological characters, and its consequent neglect of the value of physiological and ancestral differences. It is no wonder that, attributing everything to form, these biologists could see in specific marks mere footsteps in sand, shifting and variable differences that mean nothing. On the other hand a due consideration of physiological peculiarities necessarily leads to the determination of an essential difference between species and species.

The closer morphological similarities are accompanied by permanent physiological differences the more apparent must become the impossibility of specific transmutation. The tailed catarrhine apes, which Darwin holds to be our first direct ancestors, still exist with all the characteristics of which according to Darwin, they were possessed at the time when an upper departure from type occurred. Now the pertinent query suggests itself, why did only a certain number undergo this progressive metamorphosis, and why did the others so far from

merging into other types retain their essential characters up to the present time amidst environments that are radically different? Haeckel is plunged in the same embarrassment, and in endeavoring to trace human origin from his so-called *Monera* through twenty-one progressive stages of evolution he finds himself confronted by insuperable difficulties. Having traced to his satisfaction the series of developments to the twentieth stage he is utterly unable to determine the nature of the change from the Chimpanzee to man, and so he imagines a purely mythical being which he calls the pithecoïd man, or ape man, to which he denies the gift of articulate speech together with human intelligence and self-consciousness.

For additional objections to Darwin's and Haeckel's theories of transmutation the reader is referred to the chapter on the "Theories of Darwin and Haeckel," in Quatrefrage's treatise on the Human Species, and to the chapter on "Specific Stability," in St. George Mivart's work on "The Genesis of Species." Space forbids me from entering into the matter more fully, but I think I have hinted at enough to make it manifest that we cannot adopt the theory of an evolution which disregards the permanence and reality of species without more impressive arguments than have hitherto been advanced. Few writers have dressed out the views of Darwin in more attractive garb than Dr. Mitchell, and the plausible assurance with which he intimates that there can be no difficulty in the way of their acceptance being calculated to win over many an unwary reader has led me to pen the above objections to them.

ART. X.—SOME RECENT CONTRIBUTIONS TO THE
PHYSIOLOGY OF THE NERVOUS
SYSTEM OF OUR DOMESTIC
ANIMALS.

BY CHARLES L. DANA, A.M., M.D.,

AMONG somewhat over three hundred contributions to anatomy and physiology made during the past year, I find the authors distributed as follows: Germans 160, French 70, British 26, Italian 24, American 14, Scandinavian 13, Russian 6. Among the contributors to physiology America ranks as one of the last. It will be seen that nearly all of the work referred to below has been done by Germans; some of it by professors in veterinary schools. Though not of direct and practical interest to veterinarians, I have thought that the accompanying brief notes might stimulate some interest in scientific study among the readers of the JOURNAL by showing how wide and important a field is covered by the comparative physiology of the domestic animals alone. John Hunter's fame, it is generally admitted, was largely due to his basing his surgery upon comparative physiology and anatomy.

The Results of Section of the Vagus upon Sheep.—Ellenberger has made some very interesting experiments to determine the effect of section of the pneumogastric nerves upon sheep. He found that after cutting the pneumogastric on one side only, no disturbance of heart, lungs, or stomach was observed. The general health was not impaired. Ten weeks after the section, the animals were killed. There appeared to be some thinning and atrophy of the muscular wall of the third and fourth stomach in the animal whose right vagus was cut, and a similar change in the first and second stomach of the animal whose left vagus was cut.

When both vagi were cut the animals died in from twelve to twenty-six hours, except in one case when life was prolonged

for sixteen days. Death resulted in all cases from suffocation by stoppage of air passages.

There was constantly observed: complete paralysis of the oesophagus, partial paralysis of the first and second stomachs increased heart-beat up to 160 per minute, labored irregular and at first slower respiration, (twelve to sixteen per minute) and inability to regurgitate and chew the cud.

It appears that the vagus sends motor nerve fibres to the first and second stomachs, but that the third and fourth stomachs are innervated independently. The constant development of *tympanitis* as a result of paralysis of the vagus may have some practical significance.

The Act of Swallowing in Dogs is performed by muscles chiefly under the control of the vagus and glosso-pharyngeal nerves. Kronicker and Meltzer have shown that the glosso-pharyngeal nerve contains also inhibiting fibres, and that when these are stimulated the act of swallowing can not take place. When the glosso-pharyngeal of dogs is cut the oesophagus is thrown into a state of tonic spasm.

Vertigo and Irregular Movements in Dogs were produced by Bechterow upon destroying certain parts of the brain surface. The regions thus destroyed were not the so-called motor regions of the brain cortex, *i. e.* those in the neighborhood of the crucial sulcus. (Fissure of Rolando in man), but rather behind these in the region of the distribution of the fibres from the thalamus opticus. The movements resembled those produced by injuring certain lower parts of the brain, *e. g.*, the Pons, the cerebral pedicles, and thalamus opticus. The animals after a time learned to overcome in part by voluntary movements the tendency to irregular movements.

Destruction of the Cerebellum in Rabbits and Dogs.—Baginsky succeeded in keeping alive four out of forty rabbits in whom he had removed small pieces of the cerebellar cortex (the vermis.) At first no change was noticed in the animals. After a few days, however, when a destructive process had extended deeper into the cerebellum, they showed uncertainty of gait, incoordination of movements and tremor. The appearance of the latter symptom to a certain extent corroborates Hughlings Jackson's and Spencer's view that the cerebellar-spinal system regulates

the tonicity of muscles and movements in space. B's experiments also showed that when one part of the cerebellum is destroyed its function may be assumed by another part, as is the case with the cerebral lobes.

A Compensating Development of the Cerebellum in Pigeons.—Stefani extirpated both cerebral lobes of a pigeon. The animal survived and showed for three months the usual loss of spontaneity and intelligence. It then began to attempt to fly, to pick up food, etc. The animal was killed when a notable enlargement of the cerebellum was observed.

The Seat of the "Music of the Hemispheres" in the Dog.—H. Munk thinks that he has located the center of hearing in the cerebral cortex of the dog. And not only this, but he believes that different parts are devoted to the perception of different notes. This center for sound-sensations is in the convolution near the apex of the post-sylvian fissure. The posterior parts appreciate the low notes, while the more anterior portions appreciate the higher notes.

Goltz and Couty, experimenting upon dogs and apes, combat the somewhat radical views of H. Munk and Ferrier.

The Protective Function for Animals of the Semicircular Canals of the Ear.—Necessity compels most of the higher animals, but especially wild animals to be constantly on the alert, and the sense of hearing is of especial value in self-protection. Dr. P. McBride endeavors to prove the theory (which is not entirely new) that the semi-circular canals have an important function in this matter. Sudden sounds conveyed to the internal ear excite the nerve fibres. These reflexly cause a sudden turning of the head in the direction of the noise. This action is seen when a deer is suddenly startled by a whistle.

The other function of the semi-circular canals relates probable to the sense of space, Stefani has recently asserted that that the cells of Purkinje in the cerebellum were in close relation with the semi-circular canals, so that when the latter are destroyed the former elements atrophy.

Seat of "Good Nature" and Intelligence in Dogs.—Goltz, by experiments upon dogs, shows that extensive and profound destruction of both vertex convolutions causes not only diminished intelligence, but also a remarkable change in their dis-

position. Harmless and good-natured dogs, after this operation, become surly, quarrelsome, and violent.

If the occipetal lobes are damaged the animals preserve their good-tempered character, but the intelligence is more seriously impaired.

Consciousness of the Spinal Cord.—Oehl has made experiments upon frogs and eels. He considers, upon nearly the same grounds as Pflueger and Hammond, that the spinal cord in the inferior animals possesses a kind of consciousness and intelligence. Even if this view, which is still a mere hypothesis, could be demonstrated as regards cold-bloods animals it might still fail to apply to the higher animals. Since the spinal cord occupies comparatively a more and more subordinate place in relation to conscious intelligence as animals ascend in the scale.

ART. XI.—ARE THERE PHYSIOLOGICAL AFFINITIES IN THE BLOOD OF EACH BREED OF ANIMALS?

No. 11.

BY A. S. HEATH, M.D.,

Professor of Bovine, Ovine and Suine Pathology, Columbia College of Comparative Medicine, &c.

THE subject of blood affinities of our various breeds of domestic animals for each other of the particular strains, is full of significance. When we come to learn from whence our best mixed blooded animals were derived, and perceive the peculiar improvements in our grades by using pure-bred males in breeding, specially for the several distinctive industries, then we will be able to more fully appreciate the value of blood affinities of each breed for its own kind. To make the matter plainer, let us see from whence we originally derived our domestic animals in the early settlement of the country. And first, let us see where our cows came from.

The early settlers of Maine from Suffolk, England, brought with them the Suffolk Dun cattle. The characteristics of these

Dun cattle, in color and other respects, are still noticed in the State of Maine. The blood of this breed is mixed and greatly diluted, because no recent infusion of the same blood has taken place. Now, if the people of Maine should desire to revive the Suffolk Dun breed of cattle where they still have grades of that breed, and if they could secure pure-bred Suffolk Dun males from England, they could accumulate the characteristics of these animals by accumulating the blood of the Dun breed. This rule will apply to fortifying the blood of any grades with the real, noble, original blood, by enriching it from its source, or fountain head. This enriching or concentrating the blood of special breeds brings out the original qualities—color, form, size, aptitude for butter, cheese, quantity of milk, for beef, or for labor.

In 1640 Massachusetts colony told 21,500 people. These came from every part of England. They were intelligent, practical and sturdy. Among them were the best farmers, who brought and imported the best cattle England possessed. The hardy, active, rich dark-red Devons were prominent in the even small herds of that day. The blood characteristics of these beautiful animals are everywhere traced in the grades or mixed common stock of that State and elsewhere. Select of these grades cows that show some Devon blood, and place in such herds pure-bred Devon bulls, and soon there will cumulate Devon blood and Devon characteristics. The rich dark-red color will appear, the yellow skin, the compact form, the quick step, the rich milk, in a word, the Devon breed will return with each infusion of pure blood. But this will not occur with the accumulation of the purest blood of any other breed crossed upon these Devon grades. The blood affinities, therefore, of breeds for each other does exist.

Besides the breeds of cattle above referred to, there came early to America the Long Horns; the red Glamorgans; the hardy Pembrokes; the Angleseys; the polled Norfolks; the solid Herefords; the Sussex; old Durham; the old Jerseys mixed with the Brittany and Norman stock; the grand old Yorkshires, always large milkers; the dark-brown and brindle cattle of Wales; the Holderness; the black and white Dutch; the Scotch breeds, including the polled Galloways; the Irish

breeds; the Swiss; the German breeds, the glory of the modern dairies of Germany, and others, now forming foundations for grades of surpassing excellence. The breeds of our ancestors were numerous and well bred. And though our dairies are composed of these mixtures, and although 40 per cent. of our cows are worthless for any product, yet the other 60 per cent. of cows possess rich, though divergent and diverse blood affinities, yet, when bred *up* by pure males of special capabilities for the different products—milk, butter, cheese, beef, labor—they produce the finest grades of any country. American common or mixed cattle possess good blood, with vigorous breed affinities, and thus make superlative *grades*, breeding *up* profitably with the infusion of the pure blood of those breeds whose blood predominates in them. Thus, a cow having more blood of the Shorthorn breed than of any other, has more active blood affinities for the pure Shorthorn blood than for the blood of any other breed. This holds good with the Ayrshire cow, the Dutch cow, the Jersey, the Cotentine, the Charolais, the Allgaur, the Guernsey, the Swiss, the cow of whatsoever breed, provided that the blood of her breed predominates when again mixed with pure blood of the same breed. Even if there is no predominance of the blood of any particular breed, yet the infusion of a special kind of blood, and this renewed each succeeding generation, cumulates breed affinities of blood, which show all the characteristics of that particular breed strongly marked in the offspring of these unions.

The Hereford, the Angus, the Limousine, the Shorthorn, all have strongly marked beef characteristics; so, indeed, the Normandy, the Jersey, the Guernsey, the Swiss, have as well marked butter characteristics; the Ayrshire, the Limberger, the Angler, the Allgaur, have prominent cheese producing powers; while the Holstein, the Flamande and the Yorkshire have large milk yielding possibilities. Though the blood of the best of these breeds may affiliate and produce fine animals, yet, the blood of the beef breeds mixed with the animals of these peculiar characteristics produce better and more profitable results. And equally is this true of the breeds of cattle for the other special products. Then there are not only blood affinities

of breeds, but also blood affinities of the different breeds of similar characteristics. Butter breeds affiliate most profitably with butter breeds; cheese breeds with cheese breeds. In other words, animals predisposed to certain characteristics have stronger blood affinities towards other animals and breeds with like proclivities. Blood stamps its characteristics strongest and best where these characteristics are indelibly fixed and inbred.

Breed affinities and product affinities are two very different matters; yet, both kinds of blood affinities often unite in one breed. *Beef animals* of different breeds, or *butter animals* of diverse breeds, have strong blood affinities for these powers which produce these products in these breeds. But stronger still are the blood affinities—the physiological aptitudes—the vital activities—of breeds with breeds of the same consanguinity, and predisposed to eliminate a greater quantity of a certain product from the same given quantity and quality of food.

The commingling of the blood of *butter breeds* produces large products of butter; but the reunion of the blood of Jersey with Jersey, or Guernsey with Guernsey, is more consonant and produces more stable and uniform characteristics.

By breeding and feeding a herd of the same blood for a long time for any particular product, say beef, a sagacious breeder persistently selects animals of the best form for beef; animals having good digestion and surpassing powers of food assimilation for beef production; those that mature early; those that are hardy; those that have vigorous constitutions; always breeding together these animals whose physiological characteristics have changed and fixed in the production of beef of the largest amount and of the best quality, in the shortest time, and with the least expenditure of food. In this way, and by such methods, any product may be secured in any breed of cattle. But it is a great economy to select the breed for a special product whose proclivities, tendencies and physiological aptitudes bespeak satisfactory results. For instance, a Shorthorn, so long bred for beef, is not soon nor cheaply converted into a butter or cheese producer. The same rule will apply even more strongly to the other beef breeds; for in the

make up of the Shorthorn breed valuable strains of blood of a milk breed, or breeds, were infused.

It is not asserted that breeds have but one excellence; but it is certain that no animal, or no breed of animals, possessed two superlative qualities at the same time. A breed raised for a particular product, and possessing the powers to produce that product superlatively in all respects, may have other excellent capabilities, but never in so marked and transcendent degree. As a general rule, the Shorthorn, the Devons, the Hereford, the Angus, the West Highland breeds, are beef producers. Some of these are good for labor, some for milk or butter, but none of them are equally great for two or more products. Some of the beef breeds make good working oxen. The Charolais, Limonsine and Devons are beautiful animals, good oxen, and, when well fed, make beef that even the English prefer to that of the Shorthorn, the Hereford, or the Angus.

This does not in any way detract from those grand beef breeds, for even the remote grades of these breeds surprisingly show beef qualities in form and substance.

Then we are correct in asserting that there are physiological affinities of blood of the several breeds of cattle; such affinities being strongest in the blood of each particular breed for each other; and relatively strong for a product where the aptitude for a special product exists in both breeds of animals crossed to promote or secure one and the same product in a superlative degree.

Then, successful breeding requires a knowledge of the relative blood affinities; the physiological aptitudes of breeds for a special object; the tendencies of different breeds towards certain products; the correlation of part to part and product to product; also a thorough understanding of food values, and the value of sanitary measure in the breeding and rearing of our domestic animals. It is through the teachings of Veterinary Science that such knowledge must be sought and obtained. When the thoroughly educated Veterinary Surgeon shall be consulted on the subjects of breeding, management, and treatment of our domesticated animals, then the farmer will appreciate the value in economy, humanity and satisfaction, the important services of the members of so learned a profession as that of Comparative Medicine and Surgery.

ART. XII.—ABORTION OF COWS.*

BY EHRIOK PARMLY, M.D.

I find the cause of abortion so well given in Law's book on Veterinary Medicine that I copy the paragraph:

"Blows or pressure on the abdomen, slips, falls, riding of animals in heat, diseases of the abdominal organs (tyimpanitis from wet, frosted or musty fodder, inflammation of the bowels, diarrhoea, poisoning by irritants taken with the food or otherwise, venal calculi or other diseases of the kidneys or bladder), stalls too much inclined backward, overfeeding, plethora, hot, damp, relaxing stables, severe muscular exertion after long rest, exhausting feeding for milk at the expense of the system, breeding at too early an age, proximity to or contact with slaughter houses or dead and decomposing animal matter, especially the abortion discharges of other animals, drinking putrid or iced water, disease, deformity or death of the foetus, feeding on ergoted grasses or smelly wheat and corn, and, finally, the presence in the passages of a microscopic vegetable parasite (*leptothrix vaginalis*) which is easily transferred from one animal to another so as to procure abortion."

In the above I find little to aid me in fixing upon the cause or causes of a run of abortion in my herd.

A short history of the cases may throw some light on the subject. The marked feature is the first abortion which was a strange cow brought and introduced into the herd early in August. She aborted Aug. 25th in the field with the herd. She was 5 months gone in pregnancy. I then attributed it to the hard reception she received from several of the herd. The next case occurred Dec. 5th at 7 months 29 days.

The 3d	Dec. 20th,	at 6 months 2 days.
" 4th	Jan. 4th,	at 5 " 18 "
" 5th	" 6th,	at 5 " "
" 6th	" 20th,	at 6 " 17 days.
" 7th	" 29th,	at 6 " 23 "
" 8th	Feb. 20th,	at 6 " 3 "
" 9th	" 22d,	at 7 " 10 "
" 10th	" 27th,	at 3 " 25 "

*Read before the Farmer's Club March 13, 1883.

The third case I attributed to fighting, and gave orders to not allow the fighting cows to be with the others when out for exercise. The fourth case caused me strongly to suspect that I had an infectious form of disease in the herd, and I at once isolated the animals as far as possible to do so, and made some changes in feeding, but with apparently very little benefit, as I have since had 5 cases. They are gradually coming nearer their term before aborting, which looks favorable.

I throw out of question the food they are receiving as No. 1, 2 and 3, aborted on pasture and no feed. The others had good hay and corn stalks, and either a light feed of corn meal and bran, or a still lighter feed of cotton seed meal. All that was fed was in good condition so far as I am able to judge.

I find from several writers on the subject that abortions increase in frequency as pregnancy progresses, being greatest the sixth, seventh and eighth month, and most frequent in December, January and February. Their advice is to raise your cows rather than buy them, and thus avoid one result, *i. e.*, the introduction of disease into your herd from outside. The excitement attending the removal, by rail or otherwise, of pregnant cows increases the tendency to abort. Breeding too young, and milking too long in pregnancy is objectionable.

The cow aborts more frequently than any other domestic animal. In respect to her reproduction she is in a more artificial and trying condition than any other animal, as often she is given little or no rest, and is called upon to both give milk and nourish a foetus, thus having two opposing forces at work at the same time.

In my herd the aborting animals cleaned readily. The foetus, when old enough, was alive, and in one case, at three months and twenty-five days, the foetus and membranes came away together showing a relaxed condition, and death probably began at the placenta. In some herds a different state of things is shown. Death begins with the foetus, and when it is thrown off it has evidently been dead some time and is cast out as a foreign body, and the afterbirth is a long time in passing. There are evidently two different germs at work, whatever they may be.

Regarding this as an endemic and infectious the practical

question comes up, what to do in the way of treatment of those manifesting symptoms of impending abortion, and of prevention for those still in apparent health.

Isolation is often not practicable when all buildings are well filled. Temporary ones it takes time to put up, and just here it would seem no more than simple prudence for every one having a herd of any value to have on his farm a few inexpensive buildings separated from the principal barn for a hospital or quarantine, or lying-in asylum. The daily or at least weekly removal of all manure from its yards would be advisable at all seasons when there is any sickness.

I hope some information and suggestions from the Farmer's Club will be given that will enable those meeting with losses to fight successfully this very destructive disease, and if not, it will be the first time I ever came before this body without receiving information of value.

Treatment, so far as I can learn, consists in isolating at once all animals that have aborted, or that show symptoms of aborting.

Examine food for each, and make any change that is indicated.

Disinfect the stables and observe the strictest cleanliness.

Allow no accumulations in the yard, not even for a day.

The man who attends the diseased animals should not come in contact with the well ones.

When a cow has aborted, remove by the hand the afterbirth, bury or burn at once, and cleanse the womb by the use of a syringe. Various things are recommended for this purpose, carbolic acid, permanganate of potassium.

The animal that has aborted should not be bred until several periods of heat has passed. Some fix the date proper for breeding again as after the time she should have come in. Others say always allow six months rest, irrespective of the time of aborting. Others say it is difficult to get a cow in calf if she is allowed too long a rest, so lose no time in breeding.

By breeding too soon one incurs the risk of continuing the disease indefinitely. I would prefer the other risk.

The questions that arise in connection with this disease are :

1. Cause or causes? Period of incubation?
2. Can it be produced in a herd starting from the aborting of a perfectly healthy cow resulting from external or mechanical injury?
3. Can it spread from a cow, by her droppings or otherwise, prior to her aborting? In other words can she, prior to her aborting, be a source of infection?
4. Can a cow, not pregnant, carry the disease into another herd, or rather, may an unimpregnated cow have this disease in her system, of which abortion is the most marked or culminating feature, and be able to communicate it to other animals, pregnant or not pregnant?
5. Can the disease be transmitted by the use of a bull from an infected herd, or by a bull that has been recently coupled with cows that have aborted? Some writers are very positive on this point.
6. How long an absence from a diseased herd would be necessary to render it safe to introduce a calf, a bull, or an unimpregnated female in a healthy herd?
7. Has it ever been noticed that the disease is conceivable from the cow to other domestic animals, as, for instance, mares in foal kept in the same building, or breeding sheep or hogs in the same enclosure?

One friend informed me that he had not a live calf for the period of eighteen months, during which time he fed a mixture of rye, oats and corn. The rye was raised on his farm. The oats and corn he bought. They were ground together as used. He was told by a physician to stop the rye, which he did, and in a short time the abortions ceased. This is interesting, as it shows that with the removal the trouble was ended, and that there was nothing of an infectious nature produced.

I heard of another case where 101 out of 132 cows in a herd aborted during the year. No steps were taken to control the disease. It ceased the following year (four years ago). The herd has since been healthy. The owner has no information to give. He is something of a fatalist. Says everyone must expect bad luck at some time. Science will never advance with men of that stamp.

Mr. William Crozier advises to cleanse a cow thoroughly after abortion by introducing the hand, and follow with a vaginal injection of a pail of warm rain water with soft soap and borax. Then follow with a pint of linseed oil, which he says is soothing to the womb. Mr. Todd's remark about the maternal instinct being violated by removing the calf from the mother I do not think has any effect, but the removal of the calf causes the dam to come in heat sooner than she otherwise would, and if bred on this first heat the cow has not sufficient rest. I have known cows deprived of their calves to come in heat on the fifth day after calving.

Mr. Crozier last year had a case of bad presentation. He spent some hours in trying to turn the calf, but did not succeed. He then dismembered the calf, and succeeded in getting it away. The second day after she came in heat, and he had her covered. She became pregnant from this intercourse, and he wrote me a few days ago that she was about to drop a calf at term.

I have bred cows so that their calves were only ten months apart. I will not do it again. Twelve months is better. A cow bred too rapidly must, even with the best care, become prematurely old.

ART. XIII—ATAVISM.

BY HUBBARD W. MITCHELL, M.D.,

Professor of Comparative Anatomy in the Columbia Veterinary College.

BY the the term Atavism we mean that strange and peculiar power or tendency of plants and animals to revert to and acquire certain latent or long lost characters belonging to their ancestors. The word is derived from the Latin, *Atavus*, an ancestor.

But little is known of the real nature of this tendency, although we see numerous examples of it in the animal and vegetable world.

The importance of this subject is very great, especially to

breeders of pure blooded horses and cattle, as well as to those who delight to rear fine dogs and fowls. Every little while we see, in pure strains of animals who have been bred for long periods of time with the utmost care, certain new and strange qualities appear which cannot be accounted for, and which are attributed to some mistake or accident of a cross with an inferior breed. This appearance of strange qualities is due to no accident, but is a *reversion* or *turning back* of the animal's nature to some trait or quality away back in the ancestral line, and is an instance of true *Atavism*. Certain characters lie dormant for considerable lengths of time, often for many generations, and then suddenly reappear. The late Mr. Darwin wrote upon this subject, and was, so far as I am aware, the first to call attention to it. In this country the word *Atavism* has been seldom used, and then only in a vague and indefinite way, because its meaning was not well understood. In order to understand the principle of *Atavism*, it is necessary to know something of the characters and habits of certain species of animals in their feral state that have originally been derived from a common stock. After the early geological horses with five toes had been replaced by modern horses with one toe (the others becoming rudimentary), these animals in the feral state were often found to have certain shoulder and leg stripes, and hair markings on different parts of the body. In the later processes of high breeding from horses selected with unusual care, and for a long series of years, with the especial view of retaining, and perfecting, and transmitting certain valuable qualities, as of color, form, speed; suddenly, and for no *apparent* reason, a shoulder stripe, or a leg stripe, or a patch or color, or a thick leg, or a coarse skull has appeared to the utter astonishment, of course, of the breeder. The reason of this is that the animal has *reverted* to the condition of the original horse having these peculiar qualities, through some subtle tendency which is not yet completely understood, and which we call *Atavism*. When tame horses have been turned loose in parts of Europe, Asia and South America, they have, in process of time, reverted to the wild state, and have assumed the duller colors and hair markings of the true wild horse. Instances, more curious still, have been recorded where horses have devel-

oped the rudimentary meta-tarsal and meta-carpal bones, thus reverting to the original five-toed state. These bones have developed into what are known as *supernumary digits*. We see cases, frequently, of supernumary digits in many animals and man.

The original Dog was a carnivorous scavenger. The great variety of breeds we see at the present time have all sprung from selection and crossing, continued through long periods of time. In spite of this lapse of time, and the changes due to breeding, we see traits that have been transmitted from the feral state, and that have never been extinguished, as, for example, the fondness of dogs for carrion. They delight to roll their bodies upon it, enjoying the putrid odor, and finally devouring it with fierce avidity. Also the habit of turning round and round before lying down, and of scratching to cover their excrement. This habit may still be observed in wild animals of the dog family, as the Fox, Wolf and Hyæna. Its permanence is curious and interesting, as showing how so simple a trait can be so long transmitted unchanged by domestication. The highly bred and artificially cared for fancy dogs, who have been the objects of especial care by breeders, for several generations will suddenly manifest their love of carrion, thus showing how strong the tendency is to reversion to their original feral state.

This tendency is very strong in Pigs. These animals have shown a remarkable degree of plasticity of form under the wise hand of selection and domestication. Instances are noted where single members of fine white breeds, with small teeth and rounded bodies, have suddenly assumed the brown color and the formidable tusk of the Wild Boar. This can only be accounted for on the principle of Atavism. In the Ozark Mountains of South-western Missouri are great numbers of pigs that have actually reverted to the feral state. In a few generations they have assumed all the characters of their original wild progenitors, the great ferocity of disposition, the brown color, the coarse bristles, the lank body, and the dangerous tusk. They feed upon the acorns from the scrub oaks of that region, and when seen among the scattered trees which give that locality its strange and lonely park-like appearance,

they remind one of the typical wild boar of German legend.

Atavism is not unfrequently observed in Sheep. In the original state these ruminating mammals were of darker color, and coarser hair or wool. They were derived from the same common stock as the goat, llama, camel and giraffe. The close wool is due to a colder climate. Its fineness is the result of selected breeding, as also its whiteness. Instances are recorded where a ewe has produced white lambs for a number of years, and then a black one, or one with hairy wool, and no reason could be assigned for it. In such cases some remote ancestor has had black wool, or coarse, hairy, goat-like wool, and this has reappeared after many years of close and careful breeding, notwithstanding the fact that neither the mother, nor several generations behind her, had ever shown the slightest trace of such taint. This can only be due to the principle of Atavism. The tendency to reversion is especially strong in the Felidæ, particularly in the domestic cat. This animal seems to have stored up within itself all the latent characters of its original ferocity, and eagerness and cruelty of disposition, ready upon slight neglect of domestication to break out and carry the animal swiftly back to the feral state. The power of man has been exerted so slightly upon these animals that it may be said that the step of reversion to the wild state is an extremely short one.

Many instances could be adduced of reversion in the Rabbit, in the Pigeon and in the Fowl. These animals are extremely plastic in their nature under the hand of man. The color of the rabbit, and even its form, responds readily to the influences of selected breeding and domestication. The pigeon responds more readily still, and it is a comparatively easy matter to shorten the beak or change the plumage, or to breed tumblers or pouters. These last characters are very unstable and evanescent, and due, it is believed, to some injury, originally, to its *cerebellum*. Breeders have found it difficult to maintain the habit of tumbling, and if their care in pairing them is relaxed the birds revert quickly to their original state.

The light Brahma fowl, after being bred for a long time with the especial view of keeping the strain pure, will often show feathers of a different color, and when the line of ancestry is

traced back, it has been discovered that some remote progenitor had been similarly colored, and this taint of color has reappeared as a break in a long line of pure offspring. This is clearly due to Atavism.

There are instances of Atavism in the human species. A friend in Louisiana related to me the case of a white woman who many years ago became pregnant by a negro. Her child was of course a mulatto. Subsequently she married a white man, and was the mother of six or seven perfectly white children. She finally gave birth to an eighth child, and this one was a dark mulatto, with thick lips and curly wool, to the utter surprise of her husband and friends. The white man was the father of this, as of the others. This case is vouched for.

Atavism also is seen in plants, in flowers, as well as in fruits. I will not, however, give any instances of this. I have given no authorities for any of the foregoing cases. They exist, however, and are accessible if wanted. I have preferred to give the instances simply, and with the view of calling the attention of others to this interesting subject. It is impossible, in the present state of our knowledge, to explain what this influence or tendency is that causes certain long lost characters to reappear at intervals in animals. That it does exist is attested beyond doubt by breeders and careful observers. So strange a circumstance at first excited much surprise, and the owners of animals thus reverting were inclined to think that an accidental cross was the reason. Close study, however, and long continued observation revealed the fact that there was a curious tendency in animals to revert to original types or characters, and this tendency has received the scientific appellation of Atavism.

ART. XIV.—MILK-SICKNESS.

BY N. S. TOWNSEND, M.D.

IT is a common opinion that the affection known as Milk-sickness is caused by the use of milk or butter from cows that are the subjects of a disease called Trembles. This affection

is fortunately so infrequent, and is restricted to such limited portions of the country that many regard the whole subject as mythical. Others who do not doubt that a serious and sometimes fatal malady, so designated, really exists, are still uncertain in regard to its nature, cause and appropriate treatment. On these points a few facts which came under the observation of the writer are here submitted :

Symptoms of the Disease.—A severe attack of Milk-sickness is characterized at the outset by persistent nausea and vomiting. A sense of chilliness is commonly experienced and great pain and tenderness are felt over the region of the stomach. After a time fever comes on ; the tongue which was at first coated, and perhaps yellow, becomes dry and red, and sometimes cracks and bleeds. The vomiting continues, the matter ejected is at first bilious, but afterwards becomes dark like coffee-grounds, and there is obstinate constipation of the bowels.

Nature of the Disease.—The examination of cases where death occurred before relief could be obtained, showed the disease to be an acute inflammation of the stomach, such as might have been produced by an irritant poison. The inner surface of the stomach was crimson red, with patches of darker color, or of a dull leaden hue. Evidences of inflammation, though in a less degree, were found in other portions of the intestinal canal.

Cause of the Disease.—That Milk-sickness, as it occurs in the human subject, is caused by using the milk from cows that are diseased or poisoned, or by eating the flesh of animals slaughtered while similarly affected, seems to be established by facts for which it would be difficult to find any other interpretation. Of a family of six persons, attended by the writer, five who had used the milk of the same cow, had Milk-sickness ; the sixth person used neither milk nor butter and escaped entirely. At the time of the illness of this family a yoke of oxen belonging to them were sick with Trembles and both died. The cow which furnished the milk used by the family and which had pastured with the oxen was at the time severely sick, but finally recovered, perhaps because the poison was eliminated from her system with the lacteal secretion. Neither the family nor the cattle used other water than that taken from Lake

Erie. A thorough examination of the bodies of the oxen showed that both had died of inflammation of the stomach and bowels. This inflammation had been manifested during life by loss of appetite and especially by chills or rigors such as often precede inflammation. The cold or trembling stage in cattle is long continued, and constitutes the prominent feature of the affection, and hence the name *Trembles*. This case and others essentially similar leave little room to doubt that Milk-sickness is a direct consequence of using milk or other animal products that have in some way become poisonous. To the question, What produces such poisoning or disease of cattle, various answers have been given. Some have supposed the cattle to be affected with malarial fever, others have attributed the disease to bad water or poor pasture, and still others to some poisonous plant eaten by cattle with their food. The latter opinion, that Trembles is caused by a vegetable poison is generally accepted; but what is the plant which does the mischief? To this various answers have been made, one says it is *Rhus radicans* or Poison Ivy, another *Rhus toxicodendron*, or Poison Oak, etc. Probably the most satisfactory answer to the question is given in the Ohio Agricultural Report for 1858, in a communication from Mr. Vermilya, of Ruggles, Ashland Co., Ohio. In the same report it appears that Mr. John Rowe, of Fayette Co., had reached a similar conclusion many years previously. The results obtained by these gentlemen, and other observers to whom they refer, fix upon the *Eupatorium ageratoides* (sometimes called White Snake-root) as the cause of Trembles in cattle, and therefore indirectly of Milk-sickness in the human subject. In the report referred to a description and engraving of the plant are given. The *Eupatoriums* of which boneset or *Eupatorium perfoliatum* is a well-known example, are some of them very energetic in their action upon the animal economy, as any one who has taken boneset tea has doubtless experienced. The species known as *E. ageratoides* is among the most active of the family, and without doubt is sufficiently so to produce decidedly poisonous effects if taken in considerable quantity.

Treatment of Milk-sickness.—Regarding Milk-sickness, as simply an inflammation of the stomach set up by an irritant

poison, the appropriate treatment is plain enough, but unfortunately not always successful, for in too many cases the poison has done its deadly work before the nature of the difficulty is understood or relief obtained. Usually the stomach has been relieved of its contents long before the arrival of the physician, whose endeavor then is to allay the nausea and vomiting, and arrest the inflammation. For such purpose, pounded ice should be given as long and as freely as it proves agreeable; a strong mustard poultice over the stomach will also be serviceable. As soon as the stomach will tolerate medicine, laxatives such as Seidlitz powders should be administered, and if the constipation is obstinate, injections containing a drop or two of Croton Oil may be required. Of the family already referred to, one was dead before medical aid could be obtained, a post mortem made plain the nature of the disease, and with the treatment above stated the other sick ones were promptly relieved.

Conclusion.—A more thorough knowledge of botany by farmers and veterinarians seems to be desirable. Structural and systematic botany are exceedingly interesting, and their study affords admirable mental discipling; but it is not sufficient to learn how plants grow, or how to name them correctly. The character of plants, their effect upon animal life, the uses to which they may be put, and the injuries they are capable of inflicting should be more thoroughly and generally studied. The *E. ageratoides* rarely grows in enclosed pastures, it is often found in woods and protected places, even there it is not abundant or widely distributed and cattle do not readily feed upon it, and are only induced to do so in seasons of drought when good herbage is deficient. Were the plant well known, a few hours would be sufficient to eradicate it entirely from any farm.

ART. XV.—THE TEETH OF THE HORSE AND THEIR DISEASES.

BY R. JENNINGS, V.S.

(Continued.)

IT was my intention when I commenced writing upon this subject to have continued in each succeeding number of the JOURNAL to the end, but circumstances, prevented my doing so. I trust, however, that your readers have not lost interest in the subject by the delay.

Let us go back forty years, when veterinary science in the Old World was yet in its infancy, and in the New the *farriers* were the *literati*, to whose tender care its practice was intrusted. The title of veterinary surgeon was rarely heard in the United States. These were the days when symptoms of thoracic, or abdominal pain, in the horse, from whatever cause, were attributed to the presence of the then persecuted bot, and all sorts of nostrums were poured down the poor beast's throat or nostrils with a view to its destruction. Veterinary dentistry was then comparatively unknown. In fact it was not a subject for thought or investigation, and if by chance or accident the existence of a carious tooth in the horse's mouth was discovered it was looked upon as a very remarkable occurrence and believed to be an isolated case. Many a poor animal has been a silent sufferer for months and even years from the excruciating pain of an aching tooth, the symptoms indicating its presence, having been overlooked or attributed to other causes, and the poor animal brutally punished by an inhuman driver. My own investigations prove conclusively the frequent existence of this very common disease. It is a well known fact that caries of the teeth in the human family is the most common; a disease analogous to ulceration of bony tissue. It commences in the bony substance of the crown under its covering, the enamel. It is first observed as a minute brownish speck, usually upon the side, between or in front of the teeth and in the molars

frequently upon the face of the tooth, extending inwards towards its centre, leaving the enamel a thin brittle shell, which from time to time is broken off, the roots remaining in the alveola comparatively sound. Not so in the horse. Caries of the teeth is confined with rare exceptions to the molar teeth. It is first observed in one or more of the indentations upon the face or grinding surface, confining its destructive agency almost exclusively to the *crusta petrosa*, a substance not found in the teeth of carnivorous animals, and constituting the bulk of the tooth; it fills up the intermediate spaces between and around the folds of the bone and the enamel, both of which dip deep into the crown of the molar teeth. Notwithstanding the rapid progress made in veterinary science during the last two decades, the expressed opinion of many owners of live stock in the country districts is that the teeth of the horse and other stock are not liable to decay. This very common error will be fully proven as we proceed. I made this the subject of a lecture delivered before the class at the Ohio State Agricultural College February 7th, 1855, a condensed report of which was published in the *Ohio Farmer*, of Cleveland. The subject at this time was a new one to the owners of horses, and to the veterinary profession as well.

At this early day I had in my collection some 350 well defined specimens of caries in the teeth of horses and mules, together with a number of specimens in the bovine animal. The symptoms of this disease in the teeth of the horse were generally associated with other diseases, or in some cases with vice; as is pleurisy and bronchitis, with pneumonia by a large number of persons professing veterinary knowledge at the present day. My attention was first called to the investigation of this subject in the year 1853. A horse condemned as glandered was sent to the knacker to be killed, which place I had been in the habit of visiting frequently for several years previous to this time. The peculiar appearance of the carcass of this animal led me to make a careful examination of the head, mouth and nostril, which convinced me that the trouble was not glanders, but the effect of a carious tooth, which the dissection of the parts proved to be the fourth molar in the upper jaw on the left side. This tooth had been almost entirely de-

stroyed. The disease evidently commenced upon the face of the tooth, extending upwards between the folds of the bone and the enamel, continuing its course through the whole length of the fang, leaving but three ribbon like plates of bone and enamel indicating the great destruction going on and the terrible suffering the animal must have endured. Between these plates of bone, food had been from time to time forced up, finding a lodgment in the outrun of the superior maxillary bone, causing by its irritation the forming of an abscess, which found an outlet through the left nostril destroying the outer table of the maxillary bone, but not perforating the skin. I subsequently learned that this animal had been treated for chronic catarrh. The head and remains of the tooth, together with a large number of similar specimens of pathology, I sent to John Busteed, M.D., the founder of the New York College of Veterinary Surgeons, to be placed in the museum of that institution. The same year at the same place, in an examination of twenty-four heads of horses, I found the teeth in seventeen of them diseased, which in every case was confined to the upper molars. The bone and the enamel in the teeth of the horse appear to be almost impervious to the destructive agency of caries, or, at least, to resist its action for a long time. The attack is made upon the crusta petrosa, a softer substance than the bone, hence more easily injured; its more rapid wear preserves the grinding power of the molar teeth. When this third substance is attacked by the disease its destruction leaves the bone and enamel unprotected, in consequence of which, hard substances, as gravel stone, pieces of nail, &c., which sometimes finds its way into the food, coming in contact with these unprotected plates break them off, leaving cavities in the crown of the tooth, which may be detected by passing the fingers into the mouth through an adjustable gag. When these partitions remain firm it is difficult to detect the presence of the disease by such means, though its existence may be suspected from the fetid breath so common in these cases. Caries is by no means confined to the teeth of old horses; it is sometimes found in the permanent molars of young animals during the process of dentition. In the teeth of the old horse there

are no thin plates of bone and enamel; the cavities are smooth and highly polished. This is due to the disappearance of these substances from the crown of the tooth, having been worn away from long use, or broken down in masticating the food. It is a singular fact that the fourth molar teeth in the upper jaw are the ones generally affected by this disease, on either or both sides of the jaw. The lower molars, the incisors and the canine teeth are rarely involved in this disease; probably not more than a score of such diseased teeth occur in the lower molars, and less than a dozen in the incisors, and not a single instance in the canine teeth has been discovered by the writer in more than five hundred cases of the disease in the teeth of the horse. In the year 1855 my attention was called to a horse belonging to the priest of St. Augustine's Church, Philadelphia. In this case the first molar tooth of the upper jaw right side was the tooth involved, which I extracted with a pair of forceps made for the purpose. A sinu had been formed opening into the nasal cavity. A solution of chloride of lime was used as a dressing, followed in a few days with tincture of myrrh; a perfect cure was the result. The same year I met a case of caries in the first and second molars of the under jaw on the left side. An abscess had formed at the roots of the teeth, causing considerable enlargement of the jaw bone in the form of spongy exostosis; the integument was perforated in many places, through which pus of a very fetid character was discharged. This animal was destroyed. When on a visit to Jackson, Michigan, in the year 1857, my attention was called to a bay mare belonging to the Ballard Bros., livery men, having a discharge from one side of the face about two inches below the eye, which had existed nearly two years. It had been treated for fistula without effect. On making an examination of the jaw I found the trouble arose from caries of the fourth molar tooth on the right side, which I extracted. In a few weeks the animal was well. In 1858 a horse was destroyed and examined at the dissecting room of the Veterinary College of Philadelphia, having an immense tumor extending over the entire surface of the posterior superior maxillary bone on the left side, passing inwards, filling up one nostril, and extending into the mouth. Autopsy

revealed the entire destruction of the first molar tooth, and but a small fragment of the second remaining, having been almost entirely destroyed by caries. The above specimens were sent to New York with my collection. In 1859 the trotting horse Blue Dick, well-known in New York and Boston, was accidentally killed. The fourth molar tooth on either side of the upper jaw were well marked specimens of caries. Yet, as far as I could learn, he showed no symptoms indicating such a condition while living. During the winter of 1859-60 a brown mare, belonging to Mr. Andrew Godfrey, of Germantown, was sent to the clinic of the Philadelphia Veterinary College, having been pronounced glandered by a veterinary surgeon and ordered killed. Upon examination a large abscess was found opening into the nostril, caused by the presence of two carious teeth, the first and second molars of the right side. This mare was cast and placed under the influence of chloroform, and ten pieces of the carious teeth removed, the cavity cleaned out, and tow, saturated with tincture of myrrh, filled in, removing and dressing every day. Some four weeks ago this animal was sold for \$150. Since my removal to the city of Detroit several interesting cases have occurred in my practice, some of which are worthy of mention, the pathological specimens of which I send you to be deposited in the museum of the Columbia Veterinary College.

No. 1, a black mare four years old, belonged to a Mr. Maux, of this city. This animal had a discharge of a fetid character from the left side of the face, some two inches anterior to the eye. It was treated by a professional veterinary dentist hailing from the city of New York, but he failing to benefit the animal, it was sold to Mr. Jas. Brown, then Superintendent of the Detroit Omnibus Company, who placed it in my charge for treatment. After a careful examination I discovered the cause to be caries of the fourth permanent molar tooth on the left side. The animal being young, and the crown of the tooth being almost entirely destroyed, the removal of the root was attended with considerable difficulty, but, with the assistance of Dr. J. Hawkins, I succeeded in its removal. What remained of the crown was pretty well broken up in its extraction, still it is a fine specimen of

the disease. Mr. Brown removing from the city soon after, I lost sight of the animal, but subsequently learned that the wound healed nicely, leaving a very small denuded spot upon the cheek pointing out the former seat of discharge.

No. 2, a bay horse belonging to Dr. W. Dehn of this city, was a confirmed rearer and runaway. He died from congestion of the lungs, in September, 1880. This animal I did not see when living. An autopsy revealed the cause of death, and also the carious condition of the fourth upper molar tooth in the right upper jaw, with a deep cavity large enough to admit the end of a finger. The animal being of a very nervous temperament, such symptoms from such a cause might readily be associated with the suffering animal.

No. 3. Some two years ago Mr. Walton, a farmer residing near Grand Blank, Michigan, observed a bay mare munching her hay in an unnatural manner, but thought little of it. The mare gradually losing flesh, various preparations in the form of condition powders were given without benefit. A year passed by, the animal remaining still unthrifty. She now showed distress when feeding, particularly in eating hay. The breath was fetid, and gradually she became more emaciated. W. H. Green was called to see her, and, suspecting the cause, gave his opinion that the teeth were diseased. The owner was loth to believe the correctness of the diagnosis, never having supposed the teeth of a horse were subject to disease. I was sent for, and upon examination of the animal I found the inferior maxillary bone much enlarged and tumefied on the right side. I found the first molar of the under jaw ulcerated at its root, the second appearing to be involved. I decided on the removal of both, which was accomplished with little trouble. After the removal of these two teeth I found a third bony substance growing into the inferior maxillary bone, which caused the enlargement of the jaw. This, as a foreign body, I determined to remove as well, which I accomplished with much difficulty, breaking off its upper portion, which was lost. This, from its general appearance, might easily be mistaken for a double bodied incisor tooth, its fang articulating with the fang of the second molar tooth upon the outside growing from without upwards. This third

or supernumary tooth was evidently the cause of the trouble.

No. 4. Hypertrophy of the fourth upper molar tooth of the right side. The animal from which this tooth was taken, died from marasmus, no doubt caused by long suffering from the presence of this tooth in the animal's mouth, full particulars of which I was unable to learn.

No. 5, a grey horse purchased by Mr. J. H. Maris, proprietor of one of the leading stables in this city, was observed champing his hay (the first day he entered the stable) in a very unusual manner, dropping it into the manger in quids, and eating grain very slowly, daintily, and with an unnatural lateral motion of the under jaw. My attention was at once called to the animal. From the above symptoms, in connection with a fetid breath, I suspected the cause of the trouble. On making an examination I discovered a very unusual wearing of the upper and lower fifth molar teeth on the right side of the jaws. The outer half of the upper molar tooth was completely destroyed by caries; the outer half of the opposing tooth in the under jaw, meeting with no resistance, was gradually filling up the cavity, thus reversing the wear upon the crown or face of the teeth, the upper molar wearing from within outwards and upwards, the lower molar from without inwards and downwards. While examining this tooth to test its firmness, the projecting inner portion broke off, leaving the root of the tooth still firmly planted in the jaw. As the animal was not a valuable one, and improved so much in feeding, I concluded not to risk an operation upon it, as under the circumstances its removal would require the trephining of the superior maxillary bone over the root of the tooth, and punching it out through the mouth, as it would be impossible to get the forceps securely upon the imprisoned root. I will endeavor to keep track of this animal, and should I hear of his death will secure the upper and lower jaw. These long years of experience have convinced me that caries of the upper molar teeth in horses, notwithstanding the present advanced state of veterinary dentistry, is far more common than is suspected by the most experienced veterinary surgeon. This, no doubt, is due to the difficulty of examining the molar teeth in the living animal, until the disease is so far advanced that the symptoms cannot be mistaken.

(To be continued.)

ART. XVI.—OLEUM GAULTHERIA—OIL OF WINTERGREEN.

BY E. S. BATES, M.D.,

Professor of Therapeutics and Materia-Medica, Columbia Veterinary College.

UNTIL quite recently this drug has been known only as an aromatic remedy possessing slight tonic properties.

It is an indigenous plant, common in the Northern and Middle States, and chiefly known as checkerberry plant, wintergreen, partridgeberry, deerberry, teaberry, mountain tonic.

The medicinal virtues of the plant reside in a volatile oil known as *Oleum Gaultheria*, obtained by distillation. When first prepared it is nearly colorless, but age gives it a brownish-yellow or red color.

It has a sweetish, slightly pungent, peculiar taste, and an agreeable characteristic odor.

It is an unusually heavy oil, being the heaviest of the known essential oils.

It is a methylic ether of salicylic acid, containing 90 per cent. of the methysalicylic acid and 10 per cent. of a peculiar substance known as gaultherilen, a carbo-hydrogen which probably belongs to the turpenes.

It dissolves readily in all proportions with alcohol and ether, and to some considerable extent is soluble in water.

When administered internally it is quickly absorbed into the blood and rapidly eliminated chiefly through the kidneys imparting its own odor to the urine.

It is eliminated *very rapidly*, its presence being very perceptible in the urine within an hour after its exhibition.

Therapeutics.—Until quite recently this drug has been used only for its aromatic and placeboic properties. Within a short time it has come to be considered one of the most efficient drugs for the cure of acute rheumatism. Under its exhibition the pyrexia of that disease is very efficiently controlled.

The joint pains quickly disappear, and in the general influence it has over the various morbid symptoms of this painful affection it seems to be the equal, if not the superior, of any of the salicylic compounds,

It has proved equally as efficacious in the treatment of the sub-acute form as in the acute.

It manifests very decided antiseptic properties which are of practical importance.

One part of the oil to 200 parts of urine will preserve it nearly three weeks.

Urine voided one hour after its exhibition remains free from decomposition twelve days,

Ordinary urine decomposes quickly, and very unpleasant is the odor arising from it.

In active practice it is not always convenient to make a careful examination of a given specimen just when the examination would be least offensive and most satisfactory.

A small proportion of this drug mixed with a given specimen will preserve it sufficiently long without in any way interfering with a practical examination.

It is agreeable to the taste, and what is also of importance in our practice when such large quantities are required in treating larger animals, it is comparatively cheap. Its cheapness does not, however, prevent it from being deteriorated by adulterations with oil of turpentine, oil of birch, and also diluted with alcohol.

The dose for a horse varies from one to two drachms, It should be exhibited in frequently repeated doses. Being very rapidly eliminated its effects are of comparatively temporary duration.

The best results are, however, obtained by giving the drug in increasing doses at short intervals until the chief symptoms are brought under control, and then in gradually decreasing doses continue its exhibition for six or seven days after all traces of the disease have disappeared.

The mode of administration varies. It can be given mechanically mixed with oil or milk.

The best method is to rub it up with the carbonate of mag-

nesia, one drachm of the oil to the half ounce of magnesia, and give it in the form of a capsule or wrapped up in wafers.

The crudest mode is to shake it up well with water, and exhibit as a drench.

ART. XVII.—INOCULATION OF ANIMALS OF THE
BOVINE SPECIES FOR THE PREVENTION OF
CONTAGIOUS PLEURO-PNEUMONIA
BY INJECTION INTO THE VEINS.

Condensed from the Veterinarian, February, 1893.

BY PROFESSORS THIERNES AND DEGINE.

If there exists a scientific movement which deserves to be noticed and approved it is assuredly that which we see at this present time becoming known to the learned men of different countries in order to arrive at the solution of various questions relating to the nature and prophylactic treatment of contagious diseases.

In this general movement we especially remark the experimental investigations which are connected with inoculation as a preventive of these diseases.

The efficacy of inoculation for a long time has been an established fact for small-pox in the humans as well as for sheep. Recent well-known investigations have established the fact that chicken cholera, anthrax and symptomatic anthrax in domestic animals can be prevented, or modified so as to be harmless.

Similar results are said to be obtained by the inoculation of cattle for the prevention of pleuro-pneumonia. In a scientific point of view this question is virtually established, but it cannot be said to be so from a practical point of view, for as yet the fact is not well established that its application is really beneficial, that is to say economical.

In the first place the operation is not without danger to the animal operated upon. Again, its preventive action is neither constant nor certain.

Inoculation, so far as performed by us, consists simply of the intravenous injection of the virulent liquid obtained from the lungs of pleuro-pneumonic subjects. It should be taken *at the time of the inoculation* from some diseased portion of the lung which is entirely free from septic matter.

The best results are obtained by cutting the pulmonary tissue in several directions, and then pressing out the virulent serum with the hand.

The liquid thus obtained is somewhat cloudy and sanguineous and should be subsequently filtered through fine linen, after which it should be drawn up into a Pravaz syringe two grammes size.

The animal to be inoculated should be thrown in a convenient position on the straw. The hair should be cut off round the outside of the jugular vein near the throat on one side or the other.

An assistant should place his hand on the lower part of the external jugular vein so as to distend it. This being done the skin is pinched up in order to make an incision. That will enable us to more readily detach the adjacent cellular tissue, and uncover completely the before mentioned vessel. The needle of the already well charged syringe should now be introduced transversely into the wall of the extended vein and its contents slowly injected. As soon as completed the pressure should be removed from the vein. A twisted suture made with two pins completes the operation.

EDITORIAL DEPARTMENT.

THE PROGRESS OF COMPARATIVE PATHOLOGY AS REGARDS INFECTIOUS AND OTHER DISEASES.

WE propose to give a summary of some of the remarkable advances which have been made in comparative pathology during the past two years, paying especial attention to the discoveries regarding the nature of certain of the infectious diseases affecting the domestic animals and man. We acknowledge indebtedness in part of this review to the work of M. C. Leblanc, contributed to the *Archives Generales de Medicine*. *Anthrax*.—This disease has long been known to be caused by the anthrax bacillus. Pasteur and Davaine have made claims that the bacilli can be weakened in power and that then when inoculated the animals become protected. We have already described the methods in the JOURNAL. The question now is, are they really useful?

Pasteur gives some very convincing figures in support of the affirmative. On the other hand there have been failures reported in England and Italy.

The facts at present are these:

- (1.) Immunity from anthrax can undoubtedly be given by inoculations.
- (2.) The duration of this immunity is considerable (two years in some cases), but we do not yet know it to be permanent.
- (3.) The practical usefulness of anthrax inoculations upon sheep and cattle has not yet been demonstrated. Very favorable statistics are given, but, on the other hand, the weather in France has been very moist for the past year and unfavorable to the production of anthrax so that these statistics are not entirely to be trusted.

(4.) The protective virus furnished by Pasteur and his assistants varies in quality. That used in 1882 was weaker in protective power and caused numerous accidents. The art of preparing protective anthrax virus is still imperfect.

Infectious Pneumo-Enteritis of the Pig (Rouget de Porc), (Hog Cholera).—This disease has a certain analogy to anthrax.

Dr. E. Klein claims to have discovered a specific micro-organism for it. M. LeBlanc denies that this is the real microbe, however, but avers that Pasteur has found it. The parasite in question is very minute, of a dumb-bell shape, refracts light very poorly and is not easily observed. It has, however, been isolated, cultivated, attenuated and a protective vaccine obtained. This vaccine has given sufficient results to demonstrate the scientific fact that it really possesses protective power.

It will be of the greatest importance to America if a protective vaccine can really be found since our country loses millions of dollars annually from "hog-cholera."

Hydrophobia.—The study of this disease by French savants is still going on. A micro-organism has not yet been discovered. A point, however, has been gained. Pasteur has found that the virulence lies not only in the saliva, but also in the cerebral and medullary substance. A portion of this substance placed, after trepanning, in contact with the brain of experimented dogs has caused the symptoms of hydrophobia to be developed and that in a time, relatively short compared with the duration of usual incubation after the biting or inoculation of the infected saliva.

All the animals did not die and one of them after having shown symptoms of the disease, became stubborn to the inoculation of the rabies. The question is still to be further studied. It is little probable that the process of trepanning can be adopted as a preventive measure, and it is to be hoped that more simple and practical means will be discovered.

Rabies is one of the contagious diseases, the symptoms, lesions and progress of which differ most widely from those of anthrax. It has no microbe and the blood is not virulent. It will be difficult then to attenuate the virus and to make preventive inoculations.

Contagious Pleuro-pneumonia.—The pathology and prevention of this disease is still the subject of discussion. Thirty years ago Dr. Willems claimed that inoculation was an infallible preventive, and his views have still many upholders. Recent experience has demonstrated the fallacy of this view. Holland, in 1881, adopted the policy of stamping out the disease in all but a few districts. The result was that the number of cases has fallen from over 2,000 in 1878 to 12 in 1881. On the other hand, in the districts where inoculation was employed the total loss amounted to 26 per cent.

The weight of knowledge and experience is, therefore, at present against the practice of inoculation. It is one which has never been attempted in America and probably never will be.

As to the pathology of the disease, it has no micro-organism according to Pasteur, whom we can trust more confidently when he makes such denials. He says in his report:

“I have ascertained, first, that the pleuro-pneumonia virus obtained from lungs diseased is a pure product not associated with germs of foreign microbes. Second, that the virus is not grown in our usual broths of chicken and veal, nor in the leaven of beer. Third, that the contrary conclusions obtained in Belgium are the results of error in manipulation.”

Pasteur has collected the pleuro-pneumonic virus in a pure condition and he found that it was preserved in a very high temperature without production of microscopic foreign organisms. Virus collected in the usual way becomes disturbed in twenty-four hours and develops foreign organisms.

Experiments with the pure virus upon cows show that it is really more dangerous than the impure and that danger lies in the strength, not the impurities. M. Leblanc finds that by using fresh virus in clean vessels the deaths from the inoculation of 1,000 cows were only two.

Equine Variola and Glanders.—Prof. M. Trasbot, of Alfort, has claimed that the above affections were identical, and that the glanders of horses might perhaps be prevented by vaccination.

M. Leblanc experimented with inoculations of human and bovine virus upon over one hundred horses. He found that

although many developed pustules glanders was *not* prevented.

The Germ of Farcy.—Dr. Stivick, of Berlin, has discovered a minute organism resembling the bacillus of tuberculosis in the nodules of farcy. He cultivated it after Koch's method. The fourth generation was injected into two horses and produced farcy. They both died, and a post mortem showed the lesions of the disease.

The Bacillus of Tuberculosis.—Dr. R. Koch's discoveries in relation to phthisis have already been described in the JOURNAL.

Typhoid Fever in Horses.—This affection is rather infectious than contagious, and up to the present time veterinarians have not succeeded in transmitting it by inoculation. Analysis of the blood and its examination under the microscope have given contradictory results.

The disease is the result of overcrowding and change of diet. It is best dealt with by isolation and perhaps killing the affected animals. A preventive vaccine need hardly be wished for.

The Rot or Ovine Variola (La Clavelée).—This disease is not infrequent in this country. Prof. Peuch, of Toulouse, has recently studied it. For some years it had been treated by inoculation in France. The results were very like those which followed inoculation for pleuro-pneumonia. Inoculation of the rot-virus, or "clavelization," however, differed in that it *always* produced the disease. The results had been so unfavorable that farmers preferred taking the chances of contagion to those of inoculation.

Prof. Peuch sought the means of diminishing the losses caused by the inoculation of the more diluted virus, and he has tried to inject it, after dilution, into the cellular tissue. The dilution has varied from a twentieth to a fiftieth degree.

All of the animals experimented upon lived, but, unfortunately, it is not yet certain that the diluted virus, though safer, really protects.

Prof. Peuch is continuing his investigations. If he succeeds the question is raised whether by a like process of dilution the virus of human variola might not be made protective.

Remittent Ophthalmia of Horses, or Periodic Fluxion of the Eyes. (Moon Blindness.)—This disease, which almost invaria-

bly destroys the eye attacked, has been the subject of a memoir by Messrs. Hocquard and Bernard.

These authors arrive at the conclusion that the periodic fluxion is a peculiar form of rheumatic diathesis such as effects all animals under the influence of moist surroundings, and is transmitted hereditarily.

The pathology of the disease is said to be an irido-choroiditis. The authors appear to be unaware that all which they announce as new was described in the JOURNAL OF COMPARATIVE MEDICINE for April, 1881, by Prof. W. O. Moore. No acknowledgement of the prior work of this gentlemen is given.

Certain German observers have been trying to show that the disease in question is of parasitic origin. Dr. Bertin, of Stuttgart has found in an affected eye a microscopic body of a fungoid character.

M. Kryslowicz has made a similar discovery. Dr. Koch, of Berlin, has found very minute organisms in the aqueous and and vitreous humor of the diseased eyes and also in the water of localities where this affection prevails. He has cultivated them and found that they had no specific powers of any kind. M. Zundel, however, still contends that the parasitic origin of the disease is undoubted. Our opinion is that the disease has nothing more specific about it in the horse than in other animals.

An Epileptiform Disease in the Dog.—In 1881 M. Mégnin, who is well-known for his works on helminthology, described a case of epilepsy in the dog caused by an acarus (tick) of the ear. According to him this acarus was the *choriptes ecaudatus* already met with in the cat and ferret. This parasite provokes true attacks of mania in the cat, but it was the first time that its presence in the dog had given rise to accesses simulating epilepsy. M. Nocard, Professor at the Alford school, in 1882 read a note on an epileptical disease in the hunting dog, due to the presence in the ear of this same parasite, which Hering had taken for a *sarcopte* and of which Zurn had first given a description in 1874. The attacks in hunting dogs always come on during the chase, at the end of about half an hour.

The animal howls, turns in a circle two or three times, then

falls a prey to an attack simulating epilepsy. He remains half stupified from fifteen to thirty minutes, then resumes his course without giving any other sign of sickness. The animal, however, often becomes sad, fearful and savage.

At the autopsy there is found in the external auditory canal a mass of chocolate-colored wax of the consistence of mastic, obstructing all the light and driving back the membrana tympani. One finds under the microscope a quantity of ticks of all degrees of development and of different sexes. The disease is easily cured by daily injections of oil containing some parasiticide.

The Rouget in Dogs.—The skin diseases of dogs are numerous and but ill-understood. One of these, the *rouget*, is often confounded with the mange, but is really a very different disease and is probably of a diathetic nature. It begins in the groins and extends to the stomach, breast and inner surface of the legs, but never to the back or loins, in this respect being distinct from the mange. The skin in this disease, according to Mégnin, is studded with superficial, punctiform erosions, the remains of vesicles. In some places there is an oozing out of pus. The disease resembles eczema rubrum in man. The mange is often called an eczema by veterinarians, but wrongly. The best treatment is arsenic internally, gr. $\frac{1}{16}$, daily, raw meat. Externally, weak carbolic acid lotions and antiseptic baths are recommended.

Vaginal Cystocle with Displacements of Bladder and Uterus in the Cow.—This trouble is not a rare one, and Prof. Violet, of Lyons, has contributed some useful facts regarding it.

The vaginal cystocle of cows is often the consequence of the retroversion of the uterus. The bladder, dragged by the walls of this organ is found carried to the side of the vulva, where it sometimes breaks through the orifice. Often the relief of the uterine retroversion is very difficult by reason of the displacement of the bladder. Once this displacement is recognized, however, and the organ emptied by the aid of a catheter, the replacement becomes easy.

Perineal Cystocele in the Dog.—Perineal cystocele is frequent in the dog. The veterinarian will recognize it when he sees a semi-ovoid tumor, soft and fluctuating below the anus on the circumference of the ischial arch.

The size may vary but it is generally about that of a hen's egg. The most frequent cause is constipation, and the animal does not complain for a long time of any pain, nor does any symptom of indispotion warn his master until the bladder becomes irritated and there is retention of urine. As a catheter cannot be introduced an opening must generally be made with a trochar and the urine withdrawn. The bladder is then replaced. The trouble has a tendency to recur.

Lymphadenoma in the Dog. A New Disease.—This very rare affection has been discovered for the first time by M. Nocard. The skin of the animal affected is covered with nodules varying in size from that of a pea to that of a nut. The surface is red and granular.

There is evidently a hypertrophy of the papillæ of the skin which have lost their epidermis. The skin is thickened. On its surface a very albuminous liquid is seen to issue, having a very fetid odor. In other parts of the skin small hard bodies about the size of a pea is felt. The general state of the animal is that of progressive weakness. There is no sugar or albumen in the urine. There is a slight diminution of the red globules and an almost normal number of the white. The liquid of the spots was inoculated in a young dog and two kittens without any success.

Under the microscope a layer of adenoid tissue was found developing in all the elements of the skin and growing with great vigor.

American Work.—It is but due to the JOURNAL OF COMPARATIVE MEDICINE to say that during the past three years it has contributed a large amount of original work. *The Pathology of Posterior Paralysis* has been well elucidated by Dr. W. H. Porter, Dr. C. A. Meyer and Dr. G. W. Bowler.

The Pathology of Moon-Blindness was first described in this Journal by Professor W. O. Moore.

Original observations upon the *Sterility of Mammalia Under Confinement* have been made by Mr. Arthur Erwin Brown.

To the subjects of *Comparative Physiology and Psychology*, Dr. Wm. A. Hammond and the late Dr. George M. Beard both have made valuable contributions. The results of original

studies upon *Animal Parasites* and upon other branches of pathology have been given by Dr. T. E. Satterthwaite.

A very large number of contributions to *Morbid Anatomy* have been made by Professor Porter and Dr. E. C. Wendt. In no other veterinary journal in any language presents the results of so much careful microscopical work.

ABORTION IN COWS.—We should be glad if some of our readers would again attack the subject of abortion in cows, which is still the reproach of veterinary science. Neither prizes nor commissions, nor learned societies have yet discovered a cause or cure for it. Of late it has been appearing almost epidemically among some of the valuable Jersey herds in our neighborhood. Dr. Ehrick Parmly, of Seabright, N. J., is reported to have lost nine valuable calves by "slipping," within a short time. The same trouble has threatened the Hilltop herd of Mr. G. W. Farlee, of Trenton, who owns probably the finest bred lot of Jerseys in the country. The best remedy for threatened abortion, and one which has been efficacious in the herds mentioned, is half ounce doses of asafetida. As there is unquestionably a nervous element in the disease this remedy is a rational one.

ONE-STOOL VETERINARY COLLEGES.—We continue to insist upon the inutility of establishing so-called veterinary departments with one or two professors in connection with a large university or medical school. A thorough veterinary education cannot be given in this way. We learn that an epidemic of this sort of thing is threatened. It is thought a cheap way starting a veterinary college.

A WESTERN VETERINARY JOURNAL.—The *United States Veterinary Monthly* is the title of a new veterinary journal recently established in Chicago. There is a dash and *elan* about it which reminds us of the brilliant locomotion of Artemus Ward's kangaroo, "It would please you," said Artemus, "to see the little cuss jump." We congratulate our contemporary upon its fine appearance. Its editors evidently wish to give it a popular character which will make it

attractive to all stock owners. This is legitimate. We only object to its taking the name of a scientific profession, while all the time it aims to be really a non-technical and popular journal. But we wish it success so long as it honestly tries to foster an interest in veterinary science, as it so far seems to be doing.

TO THE VETERINARY PROFESSION AT LARGE.—We wish to call your attention especially to the Case Department. We also wish that every practitioner of the veterinary art in the United States and Canada would make accurate notes of cases of interest falling under his observation and forward the same to us for publication. By so doing the Journal would be a more potent agent in diffusing the practical experience of active veterinarians throughout the country and thus trust to advance and raise the veterinary standard. Trusting that this appeal will not pass unnoticed, we hope to see every State represented in the next issue.

THE treatment of fractures in the lower animals has always been looked upon as almost impossible by veterinarians, but this is absolutely wrong. Of late we have been informed by a medical practitioner that he has treated six or seven cases occurring below the knee, or hock, by the plaster of Paris splint with perfect success in every case. He applies the plaster splint in the ordinary way, and then turned the animals out to pasture for one or two months. In one case treated in this way in which the fracture occurred just below the knee the animal, after recovery, proved to be the fastest horse in town, which, by the way, was a town in which fast horses were not scarce. These are facts which the veterinarian should consider carefully and put into every day practice if desirous to keep up with this rapidly advancing age.

JOURNALISTIC CHANGES.—We are pleased to notice some improvements and changes in our journalistic exchanges. *The Medical Record* is enlarged in size, *The Indiana Farmer* has changed from a double sheet to a sixteen-page paper, and *The Nashville Journal of Medicine and Surgery* has increased its read-

ing matter, looking quite attractive in its new form ; *The National Live Stock Journal* appears in a new set of type, and *The Rocky Mountain Times* has changed its title to that of *The Denver Medical Times*, Dr. F. Marquand Trask being added to the editorial staff. *The Chicago Medical Review*, formerly issued semi-monthly, has been consolidated with *Chambers' Medical Review* and is now issued every week simultaneously in Chicago and St. Louis, under the title of *Weekly Medical Review*, and published by J. H. Chambers & Co.

Reports of Commencements and Societies.

ANNUAL COMMENCEMENT OF COLUMBIA VETERINARY COLLEGE AND SCHOOL OF COM- PARATIVE MEDICINE.

The closing exercises of the above institution took place in Chickering Hall, Thursday evening, March 29th. The hall was crowded to its utmost capacity with a very enthusiastic and intelligent audience. The stage was elaborately and handsomely decorated with a profusion of tropical plants, the Faculty, Trustees and invited guests occupying the seats, and forming a substantial background for the interesting exercises which followed. The graduating class, twenty-five in number, filled the first seats in the auditorium. The degree of Doctor of Veterinary Science was conferred by Alex. Hadden, M.D., President of the Board of Trustees. In making his final charge to the graduates he complimented the class on the high rank they had manifested on final examination, and said with these "Presents:"

"Gentlemen, you may enter upon the active duties of the profession of your choice with the full assurance that you are entitled to all the rights and privileges vouchsafed to you by the statutory laws of the Empire State. Inseparably connected with such privileges is the blessing of your Alma Mater. Her benign influences will follow you wherever you may go. She will watch your professional career with peculiar interest. Her jealous eye will delight in your prosperity, and triumph in every advancement you may make in the fields of science which are now opened out before you. She will be ambitious to have you occupy the loftiest plains of practical science, and will rejoice in all that makes your pathways pleasant in life. In adversity your misfortunes and ills will be to her a burden

and a cause of grief. We now commit you to the public, and ask her to receive you kindly, not as strangers or enemies, but as friends and ministers of mercy in whom implicit confidence may be placed, believing that all the duties which may fall to your lot in the special departments of Comparative Medical and Surgical Science may be intelligently, earnestly and honorably performed, and knowing that sanitarians and practitioners of human medicine can look to you without disappointment for aid and information in investigations highly important to the health and well being of mankind."

The Honor men of the Junior Class were then awarded the Junior Certificate of Honor by Prof. E. S. Bates, Dean of the Faculty.

Prof. Hubbard W. Mitchell awarded the prizes as follows:

R. A. Koempel, Ph.D.D.V.S., of New York, Faculty Gold Medal.

T. E. Finnegan, D.V.S., of New York, Alumni Anatomical Gold Medal.

Henry Spencer, of Junior Class, Alumni Laboratory Gold Medal.

W. H. Gribble, of Junior Class, Faculty Prize Silver Medal.

J. A. Soule, D.V.S., Silver Medal, Shoeing Prize.

W. E. A. Cuff, D.V.S., Hawks' Essay Prize, Gold Medal.

Wm. Herbert Lowe, D.V.S., Columbia Clinic Prize, Case of Instruments.

J. R. Cosgrove, D.V.S., Jurisprudence Prize, Case of Instruments.

W. H. Gribble, Junior Student, General Anatomical Prize, Case of Instruments.

F. A. K. O'Shea, Chemistry Prize, Case of Instruments.

W. H. Gribble, Robertson Prize.

R. L. Parkin, D.V.S., Clinical Cattle Prize.

Adolph. Vollmiers, Pathological Prize.

H. C. Slee, D.V.S., Physiology Prize.

Chas. B. Uibel, Wm. R. Jenkins' Prize, for Specimens of Taxidermy.

The valedictory address was delivered by H. C. Slee, D.V.S., of the graduating class. It was marked for its exceeding

originality, conciseness of expression, and the masterly style in which it was pronounced.

H. L. Ramacciotto, D.V.S., made the hit of the evening with his recitation of "Flash, the Fireman's Story."

Addresses were delivered to the graduates by Judge W. E. Curtis and Hon. Andrew L. Soulard.

The musical contributions were peculiarly excellent. The orchestra, under the direction of Louis Eckert, were honored with several encores. The "Third Aria Varia," rendered by the Stang Bros., as well as the cornet solos by Sig. Liberati, were artistically rendered and added much to the pleasure of the occasion.

The very pleasant and interesting commencement programme closed the most satisfactory time which has thus far marked the history of the College. The number of students in attendance has been larger than could be comfortably accommodated. The classes manifesting unusual interest in the various subjects to which their attention was called, and on final examination showing greater proficiency and more thorough training than any class which has yet graduated from the College.

The Trustees and Faculty realizing the inadequacy of the present accommodations have purchased a new site so that the next term will probably open in new buildings with greatly increased facilities for doing the work to which the College is dedicated.

The history of the college is markedly progressive. From small beginnings and small classes it has, within the short space of five years, attained the reputation of being the best College in the country devoted to the study of comparative medicine and surgery. Its matriculants outnumbering this last session those of any similar institution in the United States.

LIST OF GRADUATING CLASS

Asa Redington Balkam, D.V.S., Lewiston Maine.

James Robert Cosgrove, D.V.S., New York.

Emilio Charum, D.V.S., New York.

Fred. Cooper Curtice, D.V.S., Moravia, N. Y.

William Emmet Aloysius Cuff, D.V.S., New York.
Theodore De Clyne, D.V.S., New Durham, N. J.
Thomas Edward Finnegan, D.V.S., New York.
Theodore F. Hance, M.D., D.V.S., Newark, N. J.
Walter Hugheson Jackson, D.V.S., Poughkeepsie, N. Y.
Robert Augustus Koemple. Ph.D.D.V.S., New York.
Thomas S. Lippincott, D.V.S., Burlington, N. J.
William Herbert Lowe, D.V.S., Little Falls, N. J.
Robert Lincoln Parkin, D.V.S., Brooklyn, N. Y.
Hugo Louis Ramacciotto, D.V.S., New York.
Henry Whitfield Rowland, D.V.S., Metuchen, N. J.
William Henry Shaw, D.V.S., Roscoe, Ill.
Benjamin Herbert Swan, Ph.D.D.V.S., Chesterfield Factory, N. H.
John Albion Soule, D.V.S., Hyde Park, Mass.
Albert D. Sturges, D.V.S., Wilton, Conn.
Robert William Stuart, D.V.S., Mt. Victory, Ohio.
Frederick Emil Schultze, D.V.S., Brooklyn, N. Y.
Henry Child Slee, D.V.S., Brooklyn, N. Y.
Paul Will, D.V.S., Jersey City, N. J.
R. Trall Whittlesey, D.V.S., Emporia, Kansas.
Maximilian Weise, D.V.S., New York.

LIST OF HONOR MEN, JUNIOR CLASS.

W. H. Gribble, Churchville, N. Y.
Chas. B. Uibel, Reamstown, Pa.
John Hamlin, Afton, N. Y.
E. A. Parsons, Hartford, Conn.
B. A. Plint, Jr., New York City.
R. A. Stoute, Barbadoes, W. I.
W. H. Mook, Metuchen, N. J.
Charles Kuehner, Jersey City N. J.
J. L. Windolph, Darlington, Md.
Adolph. Vollmiers, New York City.

AMERICAN VETERINARY COLLEGE.

The Eighth Annual Commencement exercises of the American Veterinary College were held in Chickering Hall on the evening of March 1st. Mr. Samuel Marsh presided, and there

were also on the platform Prof. Liautard, Dean of the Faculty, and others. Prof. Charles A. Doremus awarded the special prizes. Franklin J. Hanshew received a gold medal for passing the best general examination. Two standard veterinary works were awarded to Harris L. Alderman, and a gold medal and a set of surgical instruments were presented to Richard Kay, of California. W. R. J. Mitchell, of the Class of '84, received a silver medal for passing the best examination in his class. Samuel K. Johnson, of the graduating class, delivered the valedictory address, and an address to the graduating class was delivered by the Rev. Henry Ward Beecher. Mr. Beecher said: "Human life may be of more importance than the life of an animal, and yet the veterinary surgeon may rank as high as him who ministers to humanity. A man need not necessarily be an ass because he cares for horses. The general structure of mammals below man was the same as the structure of human beings. Their functions were the same. In the study of the lower animal kingdom men ranked as high as those who studied the human body. Huxley, Lubbock and Darwin earned their fame largely by the study of the lower animals. If ever there was a faithful animal it was the horse. In the opalescent vision of St. John in the Apocalypse the horse was deemed worthy of being associated with the gods. Loving liberty, how readily he submits to bondage. He is ten times stronger than man, and yet how submissive to man's will! If a horse but knew his rights and his power, no man could abuse or maltreat him. His self-abnegation deserved a better fate. 'He is the servant of all and the slave of all and abused of all.' He begins life with one year as a colt, and when at last he has ceased to be useful to the peddler he has 'the only privilege of his life—the privilege of dying.' In war the horse is 'as sensitive to danger as the most nervous of men. When the trumpet calls he swallows his fear and offers his life as readily as a brave and patient man. Yet for him there is no reward, no glittering medal, no honorable mention in the Gazette, and no pension.' The draft horse was more to be admired than the racer. He was the family friend. What a debt was due him which was never repaid! 'The physician uses him from door to door, and collects his inevitable and inexorable fee, but the

horse gets nothing but the privilege of going again, and often without even an 'oat-stiver.' It ought to give a man pleasure to be called to minister to the sufferings of this most human and most abused of all animals.' Then there was the cow, 'not the one that pastures at the pump, nor the distillery cow that the devil fosters, but the cow that lies under the shadowy trees in Summer and looks as sleepy as an August clergyman.' She was the best physician for children. This is an age of humanity," he said, in conclusion. "Men are sensitive to suffering as they never were before. Cruel laws are passing away, and even cruelty in slaughtering animals is discountenanced. Do not let any man look down on you because he ministers to mankind while you minister to suffering brutes. Let your names be remembered for your fidelity, your humanity and your science."

Diplomas were conferred upon the following named members of the graduating class : Harry Louis Alderman, William Henry Arrowsmith, Henry William Bath, William C. Bretherton, Eugene Berget, Lemuel C. Campbell, William Dana Critcherson, Irving S. Denslow, Christmas Evans, Julian Edward Gardner, Franklin Joseph Hanshew, Joseph R. Hodgson, Frederick Willis Huntington, Samuel K. Johnson, Franklin May Kain, Richard Kay, Arthur B. Morse, John Allebaugh Myers, W. Bertram Carnes Noyes, William Hamilton Pendry, Austin Peters, B. S., James F. Ryder.

ONTARIO VETERINARY ASSOCIATION.

The Annual Meeting of the Ontario Veterinary Association was held in the Ontario Veterinary College, Toronto, on Thursday, December 21st, 1882.

Members attended from all parts of the Province. Also some from the United States.

The President, Mr. Elliot, in his opening address referred to the advancement of the profession in Canada, and citing as proof of the confidence of the public in its members that not a dollar of the funds of the Association had to be expended in defending members in law courts. He expressed the opinion

that a beneficent society in connection with the Association would be appreciated by its members, and closed his remarks with a well merited eulogium of the Ontario Veterinary College.

The minutes of the last meeting were then read and confirmed, and the Secretary and Treasurer's report read and adopted, showing the finances of the Association to be in a healthy state.

Dr. Duncan moved, seconded by Mr. Wilson, supplemented by some very complimentary remarks by Professor Smith, that in view of the great services rendered to the veterinary profession by George Fleming, Esq., F.R.C.V.S, through his valuable contributions to veterinary literature through his exertions in the passage of the Veterinary Act of 1881 and in other ways, therefore be it

Resolved, That the Ontario Veterinary Association in behalf of Colonial practitioners records its high appreciation of the labors of Mr. Fleming, and requests its Treasurer to forward the sum of twenty-five dollars as a contribution towards the testimonial about to be presented to that gentleman in acknowledgment of these services.

The resolution was carried unanimously.

Mr. Cowan moved, seconded by Mr. Coleman, that the Association having heard with pleasure of the honor that had been conferred on Professor Smith, Principal of the Ontario Veterinary College, by electing him an honorary Associate of the Royal College of Veterinary Surgeons, desired to express its appreciation of the honor conferred on the respected Professor of the Ontario College, and through him on the veterinary profession on this continent. Carried.

Dr. Duncan in addressing the meeting expressed the hope that increased interest would be taken in the meetings, and that members should regularly read and discuss papers at each meeting.

Messrs. Rogers, Cowan and Sweetapple agreed to read papers at the next meeting.

Mr. Hinman gave a very interesting account of a peculiar case in his practice.

Attention was called to a person advertising illegally as a veterinary surgeon, and the secretary was instructed to notify him to discontinue so doing.

Some matters relating to the tariff of fees were then discussed.

Several new members were duly elected.

The election of office-bearers for the ensuing year then took place with the following results: Mr. C. Elliot, re-elected President; Mr. Coleman, First Vice-President; Mr. O'Neil, Second Vice-President; Mr. Sweetapple, Secretary; Mr. Cowan, Treasurer; Messrs. Hamilton and Hinman, Auditors; Messrs. Hinman, Sanderson, Hamilton, Cæsar, Wilson, Logan, Steele and Grange, Directors; Honorary Director, Professor Smith.

Moved by Mr. Wilson, seconded by Mr. O'Neil, that the sum of twenty-five dollars be appropriated for a medal to be competed for by the students of the Ontario Veterinary College at the Spring examination. Carried.

The meeting then adjourned to meet again in the Spring.

ACKNOWLEDGEMENT.

The Columbia College Museum has been recently enriched by the donation of some very rare, interesting and valuable specimens. The donation was made by the nestor of the veterinary profession, Prof. Robert Jennings, of Detroit, Mich.

CASE DEPARTMENT.

I.—LESIONS IN A CASE OF IMMOBILITÉ.

BY A. W. CLEMENT,

Student Montpelier Veterinary College.

The subject was a bay gelding, about eighteen years of age, belonging to a cartage company in this city. About four years ago he was said by the men to have had a "touch of the sun,"—since then he had performed his ordinary work until last spring, when he presented symptoms of "Immobilité." He soon recovered and was again put to work. About six weeks ago he had another attack and was useless for work afterward. He exhibited a great disinclination to move, especially to work, and would frequently paw the air with his front feet. He was finally brought to the college and destroyed for the purpose of making a post mortem examination.

All the organs were found normal with the exception of the spleen, which was somewhat hypertrophied, and the brain, which presented the following conditions:

Nothing special about the dura or pia-mater, the canals of the latter were moderately injected. The organ was firm and hard, the substance presented no special alteration, the lateral ventricles were not distended with fluid but appeared of about the natural size, the lining membrane was clear, not granular. Attached to each choroid plexus was a tumorous-like mass about the size of a bean, which was grayish yellow in color, with a rough, irregular surface, tolerably firm. On sections it was gritty in spots, the cut surface presented numerous small rounded bodies about the size of the head of a pin; these could be easily turned out and had a glistening somewhat crystalline appearance. On examination these were found to be made up of masses of cholesterine plates closely aggregated together and mixed with fatty and calcareous matter; these were mixed with brown hæmatoiden grains. There were a few concentrically arranged bodies, but not sufficient to cause a special feature in the growth. A fibrous stroma pervades the tumors which present spots of fatty and pigmentary degeneration. The velum-interpositum was intimately united with the fornix and surface of the thalami, particularly the left thalamus which was torn in the removal. The pituitary body was about double the normal size, firm, and on sections had a grayish brown color, the anterior portion was more gray than the posterior and there was a distinct line of separation between them. There was a small hæmorrhage in the central portion. The base of brain immediately behind the optic chiasm presented a distinct depression produced by the enlarged pituitary gland, sections

of the gland showed it to be composed of cells most of which were rounded in shape and about the size of a colorless blood corpuscle.

On hardening the gland and cutting sections the alveolar structure of interior portions was well seen, and the organ appeared to be in a condition of simple hypertrophy.

The points of interest in the case is the condition of hypertrophy of the petuitary body which has not often been noted in this connection. The tumors of choroid plexure are frequently found. There was no dropsy of ventricles which is present in many instances and is thought by some to be the cause of the disease. Indeed, the lesions in this affection are so diverse that we cannot speak of any one as constant and characteristic, but they would appear to have this effect in common, viz., an increase in the intracranial pressure.

[Tumors similar to those mentioned in connection with the choroid plexuses are quite frequently met with, both in human and comparative pathology. We should be inclined to class them as angiolithic sarcoma. Whether they give rise to any symptoms during life is still an open question.—Eds.]

II.—TRAUMATIC OR IDIOPATHIC TETANUS?

BY R. LOVELL, V. S.

A very valuable young stallion, set. four, was put to five mares during the season. After this small amount of service he was kept in a box stall with a paddock adjoining, to which he had free access.

His diet during the rest of the summer consisted of a good quality of hay. The box stall, I might remark, was kept clean and in the best possible sanitary condition.

On Oct. 3rd this animal was taken to the smith's to be shod. The reason for having him shod was that he was to be trained during the winter. When he left the stable for the forge, there was no indication of disease of any kind.

The groom, however, informed me that "he made considerable fuss" while the smith was driving the nails in one of the forward feet; this resistance being so great that it was with difficulty that trainer and groom could render him submissive enough to have the shoe firmly secured.

This animal had been shod before without special annoyance to the workmen.

After being shod he was returned to the stable, and eat his hay that night and the following morning with an apparent relish.

At eight A. M. he was harnessed to a sulkey, and started for his training course. When started, the trainer found that he started with a "*straddling gait as if suddenly struck blind.*"

At this time I was called to see him, and on examination diagnosed the case as one of tetanus.

I found the horse extremely nervous, massiter muscles tense and ridged, quivering of the whole body, breathing hurried, neck stiff jaws

locked, saliva running from the mouth, and his breath very fetid. Membrane nictitans undisturbed, pulse running up at times to 80 per minute.

Treatment : Endeavored to give a cathartic :

R

Aloes Barbadoes, . . .	3vi.
Hydrarg. Chloride Mitis, .	3i.
G. Radix Po.	3ii.

Mix and put in drench.

When the above was ready it was impossible to get the horse to swallow. I then gave gr. iv. of sulphate of morphia every two hours to quiet the spasmodic twitching of the muscles. Also ext. belladonna 3i every hour on the tongue. I also cleansed the rectum with the hand and gave an enema of soap and water every hour.

Also used the following liniment over the loins :

R

Spts Camph.,	3ii.
Lac Ammoniac fort, et	
Ol Sassafras,	et
Chloroform,	et
Spts. Terebinthinae, aa, . .	3i.
Oleum Caryophylli, . . .	3ss.
Alcohol,	3x.

Mix sig. ex. use.

The animal was also warmly blanketed. He grew warm rapidly and about seven broke out into a profuse perspiration, but at eight P. M. he died.

POTSDAM, NEW YORK, Jan'y, 1883,

III.—IDIOPATHIC TETANUS.

BY JAMES RUTHERFORD.

A stallion, aged four years, had been out to pasture for the whole summer. While roaming at large had appeared perfectly well. He was removed from the paddock in the latter part of September and taken to a blacksmith to be shod. During the operation the animal was restless, and after the application of the shoes and when brought out to the road it was noticed that there was stiffness of the limbs and a staggering gait, or in the words of the groom, "He did not handle himself well."

During the following night he was attacked by marked symptoms of convulsions, which were tetanic in character. When I first saw the horse, which was the following morning, he had a stiff, straddling gait, increased respiratory movements, nostrils dilated, internal strabismus with twitching of the eyeballs. Slight noises seemed to aggravate the spasms and consequently

caused an irregular occurrence of the muscular contractions. The movements of the tongue and jaw were stiffened and later the maxilla became firmly locked.

The pulse was not markedly accelerated except during the spasm, when it would run up to 80 or 100 per minute.

The abdominal muscles were firmly contracted, the belly small and hard.

All the symptoms became more intense upon the second day. The bowels were constipated and the urine scanty during the whole progress of the disease.

The patient died at the end of forty-eight hours suffering from reflex convulsions.

Treatment.—As it was impossible for the horse to swallow I resorted to the hypodermic and rectal methods of administration, and gave Gelsemium 3i every four hours, and Chloral Hydrate in Sol. 3ii every four hours per rectum. By the continued use of these remedies the spasms became less pronounced. The trismus, however, continued in a mild degree, but later on he had a very severe and prolonged spasm, which finally ended in death.

Necropsy.—Rigor mortis marked. No appreciable lesion could be found in any part of the body. All the internal organs normal. Body well supplied with adipose tissue.

A careful examination was made of the feet, but there was no apparent irregular portion and no point of injury by the nails of the recently applied shoes.

From the commencement, this case appeared to be idiopathic tetanus?

The case occurred on Long Island in a section of country where the disease is often endemic, and is chiefly noteworthy from the fact that it is usually developed in apparently healthy and young animals and without apparent cause, and that it runs its course rapidly and terminates fatally.

Horses are said to be more subject to the various forms of tetanus than any other domesticated animal. A number of cases have been reported from various sections in this vicinity during the last few months.

As yet we cannot boast of knowing very much of its pathology or etiology. Treatment seems of little avail. Perhaps some of our young and rising veterinarians may have it fall to their lot, even in the near future, to throw more light upon this obscure and imperfectly understood malady which now so often proves itself fatal to life.

Babylon, Long Island, Dec. 1882.

[These cases are undoubtedly a class which deserves careful and thoughtful consideration by the rising veterinary students and practitioners. We should hardly be inclined to consider either case purely idiopathic. It is a well known fact in human surgery that trivial wounds of the extreme ends of the limbs are often the most prolific causes of tetanus and it seems to us that the same must be true in equine surgery. It should be remembered that within the horny box of the horse's foot there is a very sensitive lamina, which may have been injured and the cause of the disease. In both cases we are inclined to the opinion that in these cases, owing to the great restiveness of the animal, the shoes were not properly applied, the barings changed and the sensitive lamina injured and thus the tetanus produced. It is not neces-

sary to have a misplaced nail as the exciting cause. This fact seems to be fairly well substantiated by the history of these two cases.

The striking similarity of these cases certainly furnishes material for thoughtful study and further careful observation. The question also arises, are stallions more subject to this form of tetanus than other animals?

Another point of interest in the first case is the diminution in the quantity of the urine passed and suggests the possibility of some renal complication. We are not, however, informed in reference to any further examination of the same, and as we have often had occasion to remark, veterinarians seem to neglect entirely this important branch of the medical science.

We feel it our duty to continually call attention to the importance of these urinary analysis until it becomes a part of every practitioner's examination. We should be pleased to hear from the experience of all practitioners and ask them to carefully note the point in reference to these attacks occurring after application of a new set of shoes.—Eds.]

IV.—ACUTE PARENCHYMATOUS NEPHRITIS.

BY JOHN LINDSAY, D.V.S.

On November 20th, 1882, I was first called to attend a colt in this town. He was only eleven months old, and unusually well developed for his age. After the autopsy I obtained the following previous history, which was as follows:

The colt had been subject to continual sweating, and the surrounding temperature seemed to have no influence upon it. Even in the coldest weather the perspiration flowed as if the animal had been furiously driven on a warm day. He had never been perfectly dry since the first attack of sickness. Since then he had always showed signs of slight pain, and while the pain lasted constantly bit at his loins. Had only once been seen to urinate and then passed about one-half pint. He also had a very bad smell. His appetite, however, was good, and he appeared to feel pretty well. At this time he seemed somewhat reduced in flesh for one that had been out to pasture. He had been brought to the stable on this day.

On examination I found the animal to be suffering from colicky pains, repeatedly lying down and getting up, rubbing against the stall, biting at the left hind leg, and anxiously looking at the left flank, pulse quick and strong, 80, temperature 103, with a desire to micturate but once while I was there. Food of day left in the manger.

I diagnosticated some renal trouble, and gave oleum lini. oj. , Tr. opii $\mathfrak{z}\text{i.}$, spiritus ethæus nitrosi $\mathfrak{z}\text{i.}$, also a rectal injection of warm water. Had some thick blankets wrung out in hot water and placed over the loins. This treatment gave him relief from the acute symptoms.

I remained for an hour and there was no return of pain, and he commenced to eat. When I left him I ordered a renewal of the hot blankets; also left word that in case he showed signs of returning pain to give chloral hydrate $\mathfrak{z}\text{ss.}$ in Oss. warm water and to keep using the warm applications to

the back. Nov. 21st colt looked bright, and was eating well ; had no return of pain.

Heard nothing further from the colt until February 2d, when the owner called to say that the horse had lost his appetite and was again suffering from pain. When I arrived at the stable the animal stood in one corner with head dependent, eyes dull and heavy. I watched him for half an hour, but he showed no signs of pain. His food was in his box. Temperature, 101°, F. Pulse, 38 to the minute.

I informed the owner that I considered his horse to be suffering from indigestion, ordered oleum lini Oss., all feed removed, and the next morning a few steamed oats.

On the 5th I was informed that the owner was much worried as the colt had a bad diarrhoea since the night of the 3d, and was growing weak very fast.

When I examined the animal he was lying down, his ears and nose very cold. I made him get up, when he immediately began to strain, passing nothing but mucous. He also showed some signs of pain. I thought the colt to be suffering from mucous enteritis and at once gave Tr. opii ℥i., spts. ethus nitrosi ℥iss., spts. vini gallici ℥iv., in one pint of thin flour gruel, this dose to be repeated in one hour if the pain had not ceased. At the time I gave him an enema of flour gruel containing ℥i. of Tr. opii. This gave some relief. I also left orders for all water to be kept from him, and its place taken by milk and eggs.

At eight o'clock, P. M., I was informed that everything was progressing favorably, and that he had drunk twice of the milk and eggs.

At eleven o'clock, P. M., I was called, and with the summons came the information that the colt was dying.

When I arrived the colt lay upon his side with legs outstretched. No pain. Breathing short and quick. Eyes insensible to light. Mouth very cold.

Gave spts. ethus nitrosi ℥ii., Tr. digitalis ℥xx. In fifteen minutes he got up, but a short time after dropped dead.

Necropsy.—The animal was well developed, being unusually large for the age, and when the skin was opened a fair amount of adipose tissue was found. The skin itself was loose, oily, clean, the hair smooth and glossy.

Thoracic cavity.—The heart was fine and large, but not out of proportion to the size of the animal. The internal structures being well developed, the valves free and sufficient. The arteries were large and strong. Normal amount of blood and clots in the heart cavities. The blood, however, was a little dark in color.

Lungs. Both of these organs were normal save a slight congestion and considerable œdema.

Spleen.—This organ was normal and well developed.

Kidneys.—Both organs were completely disorganized. They were nearly free from all perinephritic adipose tissue. They had not their normal shape, but that of a flattened mass. Their true capsules were easily torn, and when ruptured the contents, or that which once was the renal tissue, easily spread itself out into a thin, flat, gelatinous mass. The glands were not 1.5 centimetres ($\frac{1}{2}$ in.) thick at their centres. I tried to cut them, but it was

impossible. The knife would go through, but there was no cut surface to be seen after it was withdrawn.

Bladder.—This organ had about two ounces of urine in it.

Stomach.—It contained about four quarts of liquid food, muscular coat slightly congested, mucous coat normal.

Small Intestines.—Were slightly congested both in the mucous and muscular coats. They contained some liquid food.

Large Intestines.—These were slightly congested, but practically normal.

Liver.—This organ showed very great congestion of the right lobe, with numerous large ecchymotic spots. When cut these extravasations were black, as if gangrene was about to set in. The right lobe was less markedly involved.

HUNTINGTON, L. I.

[Again we have the unfortunate fact that there is no history of any examination of the urine. We are sorry to have again, and so constantly to call attention to this important fact that examinations of the urine are so often neglected. From the fact that we have no account of the urine and kidneys too rotten for microscopical examination, it must of necessity leave the diagnosis of the case somewhat in the dark. But, judging from the rational signs, we are inclined to think that the case is one of acute parenchymatous nephritis. The case is certainly one of great interest, and shows careful observation on the part of the attending physician, and we sincerely wish there were a larger number of veterinarians who had as deep an interest in scientific medicine, and would forward their cases for publication and the good of their fellow practitioners.—ED.]

V.—ACUTE PARENCHYMATOUS DEGENERATION OF THE KIDNEYS IN A MARE.

BY FRANK D. WALTON, D.V.S.

The animal was a young mare, aged 7, which had previously been well and active.

She had been at rest in the stable for several days when she was harnessed and put to light work. After being driven a short distance she became uneasy and fell into a profuse perspiration, which extended over the whole body, and it was with great difficulty that she was returned to the stable, so great was the prostration.

Dr. Wallace was first summoned to attend the patient, and found the animal quite restless, with a weak and tottering gait. An attempt was made to walk her to the hospital, but after going a block or two she lost power in the posterior extremities, and fell to the ground totally unable to raise herself.

An ambulance was summoned, and in this way she was removed to the Columbia Veterinary Hospital.

The common veterinary diagnosis azaturia was made.

The urine in this case was scanty, dark in color, and loaded with thick and tenacious mucus.

A careful examination of the urine by the pathologists of the college gave the following very positive and diagnostic results, viz.: reaction neutral, sp. gr. 1.030. It also, after filtration to get rid of the thick and tenacious mucus, responded to the various tests for albumen, namely; 1, nitric acid alone gave a marked precipitate; 2, heat and nitric acid, a marked precipitate; 3, heat and acetic acid, gave a marked precipitate, which was not dissolved by adding nitric acid, but intensified. By these tests it was positively proven that albumen was present in large quantities as well as mucus.

Sugar was also tested for, but found to be absent.

Urine, to be examined chemically, should always be filtered first.

A careful microscopic examination was made of the unfiltered portion, and it was found to contain large quantities of granular casts and granular debris, also a little pus and blood, and some of the ordinary crystalline substances commonly found in normal urine..

From these positive facts and the history of the case, the diagnosis of acute parenchymatous degeneration of the kidneys was returned.

The animal from this time on was treated accordingly. Cathartics were given to relieve the kidneys, and help in removing effete material from the blood. Hot and stimulating lotions were applied to the loins.

The mare, however, gradually grew worse, the urine more scanty. Uraemic convulsions set in, and there was a strong urinous odor from the whole body.

The following day large doses of pilocarpine and digitalis were administered, which threw the animal into a profuse perspiration, but all to no avail, for the convulsions steadily and rapidly grew worse, and passed on to coma, which caused death on the fourth day after the onset of the disease.

A necropsy was made shortly after death, and the only marked lesions was that of the kidney. The kidneys were a little enlarged, the capsule normal and non-adherent, the underlying renal tissue smooth, but pale in color. Both glands were softer than normal.

Microscopically they showed a marked granular change of the epithelium, but no special change in the interstitial tissue, the pathological changes therefore confirmed the diagnosis made prior to death.

COLUMBIA VETERINARY COLLEGE HOSPITAL, December, 1882.

[This case is one of exceedingly great interest, and we would recommend the readers to carefully peruse Dr. Porter's article upon the subject of Acute Parenchymatous Degeneration of the Kidneys.—Ed.]

VI.—RECURRING CYSTIC TUMORS OF THE SUPRA-SCAPULAR REGION.

BY J. LINDSAY, D.V.S.

On August 31st a horse was driven to my office from Northport, L. I. He was suffering from two very large cystic tumors, one on each side, just over the superior border of the scapula. The two were so large that they met at the dorsal line, thus forming a double tumor which projected upwards very much like a hump upon a camel's back.

I opened them and they discharged a liquid of a yellow color, and some-

what resembled synovial fluid, and contained flakes resembling those seen in curdy pus. The total amount of the fluid was about three quarts.

After their contents had escaped I injected a solution of zinc sulphate (3v. to 3ii.) into the sac of each tumor, and then plugged the wound with oakum.

As I could not see the animal frequently I told the owner how to inject the cavity twice daily, and keep them plugged with fresh oakum, I also ordered rest and when put to work to use a Dutch instead of a Hame Collar, as I was inclined to think the ill fitting collar the cause of the trouble.

At this time the horse was much reduced in flesh, had been worked hard, but otherwise appeared to be well and strong. He had been fed far more than his mate, yet he was thin and his mate in good condition. All this time, however he had a ferocious appetite yet failed. It was thought from the appetite that he might have intestinal worms.

On account of the impoverished condition and the ichorous discharge from the tumors, I gave him 3i of Ferri Sulphate with his food twice daily.

From this time until Dec. 31st I never saw or heard from the horse, but on this day, he was again brought to me for treatment for another cystic tumor, located upon the left shoulder at the middle of the scapula.

This growth seemed to be of the same nature as the former neoplasms, and when opened discharged the same kind of fluid. At this time his general condition was remarkably good, he was fat and slick, and his nostrils looked bright and normally red. The former wounds had healed with very slight scars. The old tumors had evidently perfectly healed, and the present one originated wholly independent of the first.

January 20th, was called to see the horse, for after the healing of the third a fourth appeared at the summit of the withers and the owner opened it, but it failed to heal. When I came to examine, a small sinus was noticed, from which there was a slight and thin discharge. Upon opening this sinus it was found that the scapular portion had been undermined and at the bottom there was quite a large sac.

I opened this sac by a long incision from the superior opening to the bottom of the anterior border of the scapula and thus exposed the whole cavity, and ordered it washed daily with a solution of Carbolic Acid and Glycerine.

The wound was covered with a piece of muslin to keep out dirt. On the 26th the wound was so nearly healed that I left him to the care of the owner.

February 21st, passing by, I stopped in to see him, and found the wound almost healed and the horse in the best of condition and spirits.

On the 24th the owner called to say that the swelling was returning with a rising on the back of the neck, and wished me to call.

As there seemed to be no pressing necessity, I did not see the horse until the 26th, and found him in this condition. Breathing very labored, weak and shallow. Pulse hardly perceptible. Temperature, 105° F. Animal very weak. Swelling hard, extending from the neck down both shoulders and side of back as far as the hips. The swelling which radiated from the common centre had a doughy oedematous feel.

As there appeared to be no chance to save the animal I ordered him destroyed. He was led about 300 yards from the stable for this purpose.

Owing to his extreme weakness it was almost impossible to get him there, and it was necessary to stop and rest several times on the way.

Owing to the severity of the weather no autopsy was held.

HUNTINGTON, L. I.

[As the character of the cyst walls was not described, nor the immediate surrounding tissue, it is absolutely impossible for us to state positively the nature of the growth. It seems quite probable, however, that they were malignant in their nature on account of frequency with which they recurred. The writer speaks of having seen similar cases and states that they always occur in weak and debilitated animals. This fact would suggest a scrofulous or streuous nature. The cause of death, we should be inclined to think, was due to a diffuse cellulitis septicæmia, and possibly pyæmia. A more careful study of such cases will have to be made to clearly elucidate the pathology of such conditions. Another interesting fact in connection with this case is that when the owner tried his hand at surgical treatment it was not so successful as in the hands of a scientific veterinarian. This fact ought to be encouragement of the positive kind to the student and practitioner, and teach the laity that a good veterinarian is well worth employing at all times—ED.]

VII.—PENETRATING WOUND OF ABDOMEN—RECOVERY.

BY G. P. DELISSER, V.S.

Dec. 22d, 1882, I was called to see a large, bay truck horse, used in team, which, while in harness one-half hour before, had been run into and poled by another team. A sliver of wood from the broken pole had penetrated the abdominal cavity about six inches to the right of the median line and about three inches anterior to the umbilicus on the same line. There was also considerable laceration of skin and superficial abdominal fascia, around the wound, the latter being laid bare for several square inches. The wound had bled and was bleeding quite freely. On careful examination of the injury I could find no evidences of either splinter or other foreign bodies left in the skin or abdominal cavities, nor was there any hernial protrusion of the intestine. In order to explore the wound thoroughly I passed a long silver probe into the abdominal cavity at least six inches. Having become satisfied that the penetration had taken place, I washed thoroughly the wound and closed it by strong sutures, leaving a small opening in the most dependent part for the serous fluid or pus to escape. I then, by means of a piece of cotton fabric covered with Balsam of Fir, sealed up the wound, covered it with a compress and fixed it in position by means of a bandage lightly drawn around the body of the animal. I then secured him so that he could not lie down or disturb the dressing in any way. Ordered a small bran mash, and gave an opiate sufficient to secure rest, which was

Tr. opii ʒii.
Ol. lini sem. Ol.

December 23.—Animal breathing somewhat more rapidly than normal and

seemed to be suffering some pain. Thinking it might be due to the bandage I removed it and redressed essentially as before.

December 24.—Was more comfortable; breathing less frequently; seemed, however, dull and feverish; I ordered a drench of

Tr. opii.,	3ii.
Ext. Belladonna,	3i.
Chloroformi,	3ii.
Aquæ,	Ol.

December 25, 26, 27.—Seemed quite easy. The wound kept clean. Animal fed moderately on mash and some moistened hay.

December 28.—Not so well; refused food; for first time the temperature 103, pulse 60; very uneasy; pawing quite constantly and trying to lie down; I gave hypodermic injections of morphinæ sulph., gr. vi., every hour for four consecutive hours, when rest was obtained.

December 29.—Prof. Walton of Columbia Veterinary College, saw the animal in consultation. He examined the wound, which was then beginning to suppurate and thought it was doing as well as circumstances would allow.

He advised the treatment to be continued.

December 30-31.—The animal was easier; morphinæ was given hypodermically grs. iii., t.i.d. As his uneasiness became less, the wound was washed out daily with a carbolic acid wash (1-40.)

January 1-2, 1883.—Doing better; eating mashes.

January 3.—More uneasy; breathing hurried; suffering evidently some pain; I removed bandages entirely and dressed wound with turpentine and sweet oil; gave morphine hypodermically sufficient to quiet pain grs. iii., every two hours for three times. As bowels had not moved for several days I gave an enema of warm linseed oil, which had the desired effect.

January 4.—Was a little easier; pulse 55, temperature 103, respiration, a little more rapid than normal.

January 5.—Much easier; wound freely discharging pus; washed out thoroughly with hot water carbolized.

January 6.—Broke his halter during the night, lay down, tore several sutures out and the dressing off, which produced same gaping of wound which had nearly closed in some places. As it was evident that the wound could heal thereafter only by granulations, I had the parts washed twice a day with warm water and carbolic acid (1-40) and dressed with light compresses till the wound was entirely healed, which was on January 21st, 1883.

January 28.—The horse was again put to work, being considered quite well.

NEW YORK CITY.

VIII.—INTESTINAL CALCULI LODGED IN DIAPHRAGMATIC CURVATURE OF THE COLON.

BY FRANK V. WALTON, D.V.S.,
Surgeon to Columbia Veterinary College Hospital.

Was called on March 3d to see a bay horse somewhat advanced in years. When reached, the animal was found to be in great pain.

The previous history was that he had not passed his feces during the last twenty-four hours and had refused all food.

A diagnosis of impaction was rendered. Anodines cathartics and anemas were given without any satisfactory result. Hot blankets were also applied for eight hours in succession, but proved unsuccessful. The animal, however, lived for three days, during which time he suffered considerable, although morphia was freely administered.

A necropsy was held a few hours after death. The intestines were greatly distended by gas and contained considerable fluid. Upon opening the great gut, a large calculus, weighing $7\frac{1}{4}$ pounds, was found in the diaphragmatic curvature of the colon. Strange to say, the horse had not been subject to colics, but had had an attack about one year ago.

There was no doubt in the mind of any person who saw the animal during life, but that it was a case of impaction; but just what the cause was continued in doubt until the autopsy.

One of the students who saw the case thought he got a point of localized dullness, and returned a diagnosis of intestinal calculus, but as the tympanitis and fluid became greater, even this little sign rapidly disappeared.

The stone, when removed, was not one of the smooth variety commonly met with, but was rough and nodulated, somewhat like the mulberry calculi, commonly found in the human bladder. This roughened exterior was an apparent shell to an internal and harder substance. While drying, this outer coating which, when moist, was more pasty in consistency, became dry and brittle, and easily cracked off from the central body.

Although representing the irregular contour of the mulberry calculus of the bladder, it was not of that variety, the comparison referring only to the gross external appearance.

As yet the calculus has not become sufficiently dry and hard to make a section of the same, but later on we will give a more complete description of the appearance of the section.

NEW YORK CITY C. V. C. H., March, 1883.

IX.—HÆMATURIA ASSOCIATED WITH NEPHRITIS.

BY FRANK V. WALTON, D.V.S.,

Lecturer on Anatomy at the Columbia Veterinary College.

A grey mare was brought to the hospital suffering from discharges of bloody urine.

The previous history of the case was that the animal was kept for driving purposes, and was only used about twice a week, but then was generally driven long distances. Had always been a good feeder, and had not had a sick day for the past five years.

After arriving at the hospital, alternating doses of ergot and ferri perchloridum were administered.

Examination of urine naturally revealed albumen. A microscopic exami-

nation was not made, but from the rational symptoms a renal degeneration was suspected.

At the end of five days the hemorrhage stopped, the urine cleared, and the horse was apparently well and sent home.

During the next two weeks she was used for short drives. One day of the third week, while on the road, she was suddenly taken with colicky pains, and was immediately returned to the hospital.

Tympanitis rapidly increased, and the cæcum was punctured to remove the gas, it being the only possible means of relieving the animal and saving life, but this dire resort proved unsuccessful and the mare shortly died.

At the autopsy the principal changes met with were the marked softening and degeneration of the renal tissue. The liver also had apparently undergone some granular degeneration. The renal disease was probably the great cause of death.

[We are sorry to have again to call attention to the fact of the incomplete urinary examination, and the entire neglect to examine the kidneys microscopically after removal from the body. Until veterinarians are willing to wake up to more close and accurate work, such as is done in human medicine, they must not expect to advance much from where they now stand, but the very minute they do a mighty change will rapidly follow. By referring to one of the previous cases reported by Dr. Walton you can readily see how positive the diagnosis was before death, and how it was confirmed at the autopsy. By a careful study of these cases we are inclined to the opinion that the line of treatment will finally be such that many cases may be cured which now die at the end of a few days. We know that it takes a little time and trouble to make these accurate diagnosis, but when it will enable the use of the ounce of prevention against a pound of cure it seems quite reasonable to suppose that ultimately it will pay the largest bonus.—Ed.]

X.—FRACTURE OF THE INTERNAL METATARSAL, OR INTERNAL SPLINT BONE.

BY FRANK V. WALTON, D.V.S.,

Surgeon to Columbia Veterinary College Hospital.

Gray gelding, aged 12, occupation, heavy truck horse.

While pulling a heavy load on Broadway he lost his footing, slipped, and suddenly became very lame.

The animal was brought to the hospital, and upon examination the internal metatarsal bone, commonly called splint bone, was found to have been fractured very near its superior articular surface.

The horse was kept at perfect rest, and warm applications applied until the swelling disappeared. This having been accomplished a plaster of paris splint was applied and the animal partially supported by slings for a short time.

At the end of thirty days the splints were removed and complete union was

found to have taken place. The animal was kept at rest for five days longer when he was permitted to attempt slow work.

[It occurs to the editors that this was an unusually long time to lay an animal up for so trivial an injury as the fracture of one of these small and accessory bones. Had it been one of the main bones of support it probably would have taken all this and more time.—ED.]

XI.—CHRONIC RHEUMATIC ARTHRITIS WITH OSTEOPHATIC OUTGROWTHS OCCURRING IN A YOUNG OX.

BY J. S. WINDOLPH,

Student at Columbia Veterinary College.

The animal from which this specimen was taken was an ox of the grade known as Shorthorn, color nearly white, with only a few rone spots. The animal, purchased out of a drove of western cattle, was finely proportioned, with the exception of weak and crooked legs.

He was turned into a meadow with others of the same drove, and seemed to do as well as the rest for several months.

The first symptoms were swelling of the joints which were soft to the touch, accompanied by a slight rise in temperature. Later on, the ox became more stiff and seemed to have pain, and a crackling sound was heard when the joint was moved. Still later the hock became somewhat semi-flexed.

The appetite remained fair, yet the animal constantly lost flesh and strength until finally his movements were executed with great difficulty.

A shed was built for him near the barn where he was placed for the winter, the owner thinking he must have broken his leg.

His appetite remained fairly good during the winter, but he did not gain much either in flesh or strength.

In the spring it was with great difficulty that he was removed from his shed to the pasture. For a time he apparently picked up a little, but all the joints began to show marked signs of enlargement, and the one first involved was absolutely immovable.

By fly time the ox was very weak, thin, and perfectly hidebound.

He died towards fall, the most emaciated animal I ever saw.

This particular joint I saved, as it was the one most involved. Most of the other joints of the extremities were more or less disorganized by bony deposits around them, this condition being most marked at the carpal articulations.

The specimen, which is now in the Columbia Veterinary College Museum, is an exceedingly fine example of this form of joint disease. Although the articular surfaces are still free, a complete ankylosis has resulted from the interlocking and ossification of the nodular growth springing from the opposing bones.

[This, in connection with a similar specimen removed from a corresponding joint in the horse, render the museum of the college rich in this form of lesion, as it is in almost every department. Although the museum collection is not as rich in numbers as some older ones, it comprises a very rare collection, and illustrates almost every diseased condition, and also many rare anatomical specimens. The anatomical specimens added by the class of 1883 are unusually fine.—Ed.]

XII.—FRACTURE OF THE OS INOMINATA.

BY FRANK V. WALTON, D.V.S.

This remarkable case was brought to the hospital in an ambulance, being absolutely unable to stand.

The history accompanying the case was that the day previous while on the road the animal caught one of his hind feet in a car track in some unexplainable manner, and in trying to extricate the foot tore off the shoe. The shoe was replaced, and he finished his day's work as usual. The next day he started out apparently as sound as ever, but about 11 o'clock, A. M., while pulling a load of sand, he suddenly staggered and fell.

When first seen an examination was made per rectum, and fracture of the pelvic bones diagnosed. The fracture involved both istium and pubis. In other words the line of fracture was across the anterior rami of the istium into the obturator foramen, and from the obturator foramen through the transverse rami of the pubis into the pelvic cavity.

Prior to destruction the animal thrashed around considerably, and several of the prominent spines of the pelvic bones were found to be injured at the necropsy.

The treatment consisted in destruction of the animal.

[This certainly is a very interesting case, and raises the question as to the time the fracture was produced. Was it by the catching of the foot, or was there a diseased condition of the bone which rendered them unable to sustain the pressure of the heavy draught strain? We are inclined to the opinion that there must have been primarily a diseased condition of the bones, which rendered them more friable than normal, and that the unusual strain from catching the foot, followed by the heavy draught strain, finally resulted in the fracture. Had the symptoms developed immediately after the catching of the foot it might be looked upon as the sole cause.

Little else could be done in the way of treatment.

Had the animal been a valuable breeding mare the question of treatment might be worthy of consideration, but even then for only a moment. If the predisposing cause were a diseased condition of the bone the value for breeding purposes would be rapidly diminished. Again, if such a condition were treated, there would be great danger of a deformed pelvis and an obstruction to free delivery produced, so that in all cases death of the animal would be the only rational mode of dealing with such cases.—Ed.]

REVIEWS.

VETERINARY MEDICINES—THEIR ACTIONS AND USES. By Finley Dun. Sixth Edition. Published by W. B. Jenkins, New York. 8vo., 676 pages.

The long and severe test of so large a number of editions, and especially where used as a text book in the various Veterinary Colleges of Europe and America, and the English Colonies, is a compliment not acquired without intrinsic worth.

This book is printed in large type, in the best style of modern bibliography. The arrangement into alphabetical order, according to the English nouns of veterinary medicines, is both convenient and admirable. Its entire devotion to *Materia-Medica* is another recommendation as a text book.

The scientific treatment of the numerous subjects considered is most admirable. There is no ambiguity in any part of the work. In fact Finley Dun's ability is conspicuous in every part. No matter what subject his pen touches it is treated in a creditable manner. The author is one of the ablest writers on the various subjects of Comparative Medicine.

REPORT OF THE COMMISSIONER OF AGRICULTURE FOR THE YEARS 1881 AND 1882. 8vo., 704 pages—plates. Washington, 1882.

For the first time in a number of years this report is issued sufficiently early to be of service to its readers. The portion devoted to veterinary subjects is particularly interesting at the present time, containing as it does Dr. D. E. Salmon's report on the swine plague, fowl-cholera, and Southern cattle fever. In regard to fowl-cholera the Doctor decides that the disease is introduced in some tangible form into the bodies of the healthy fowls by way of the digestive organs.

The other articles are a report on the Swine Plague and Diseases among Horses, by Dr. H. J. Ditmers; Contagious Pleuro-Pneumonia, by Charles P. Lyman, F.R.C.V.S.; and Anthrax among Cattle in New Jersey, by Dr. Ezra M. Hunt.

BOOKS AND PAMPHLETS RECEIVED.

AN INVESTIGATION INTO THE PARASITES IN THE PORK SUPPLY OF MONTREAL. By William Osler, M.D., M.R.C.P., and A. W. Clement. Montreal, 1883. Reprint from the Canada Medical and Surgical Journal, January, 1883.

ON CERTAIN PARASITES IN THE BLOOD OF A HOG. By William Osler, M.D. Reprint from Canadian Naturalist, Vol. 4, No. 7.

ON CANADIAN FRESH-WATER POLYZOA. By William Osler, M.D. Reprint from Canadian Naturalist, Vol 4, No. 7.

REMARKS ON CATTLE PLAGUE VACCINATION, with an appendix on the inoculation of goats with the virus of pleuro-pneumonia. Translated from the French of Dr. C. Pigeon. London, 1882.

THE PERCENTAGE OF COLLEGE-BRED MEN IN THE MEDICAL PROFESSION. By Charles McIntire, Jr., M.D. Read before the American Academy of Medicine, Philadelphia, 1883.

JAHRESBERICHT DER K. CENTRAL-THIERARZNEI-SCHULE IN MUNCHEN. 1881-1882. 8vo., 136 pages. Leipzig, 1883.

FIRST ANNUAL ANNOUNCEMENT of the School of Veterinary Medicine of Harvard University. 1883-84.

JOHNS HOPKINS UNIVERSITY CIRCULARS.

ANNALS ET BULLETIN de la Société de Médecine de Gand.

THE VETERINARIAN. A Monthly Journal of Veterinary Science. Edited by Professor Simonds. *London.*

THE QUARTERLY JOURNAL OF VETERINARY SCIENCE IN INDIA AND ARMY ANIMAL MANAGEMENT. Edited by Charles Steele, F.R.C.V.S., assisted by Fred. Smith, V.S., and John Henry Steel, V.S. *Bangalore, India.*

JOURNALS.—The Veterinary Journal, London. Der Zoologische Garten, Frankfurt. Schweizerisches Archiv für Thierheilkunde und Thierzucht, Bern. Archiv für Wissenschaftliche und Practische Thierheilkunde, Berlin. Repertorium der Thierheilkunde, Stuttgart. Kansas City Review of Science and Industry. Chicago Medical Journal and Examiner. The Medical Record, New York. The College and Clinical Record, Philadelphia. Annals of Anatomy and Surgery, Brooklyn. New England Medical Monthly, Sand Hook. Chicago Medical Review. Virginia Medical Monthly, Richmond. Nashville Journal of Medicine and Surgery. The Southern Clinic, Richmond. The Western Medical Reporter, Chicago. Journal of Cutaneous and Venereal Diseases, New York. Denver Medical Times. The St. Joseph Medical Herald. San Francisco Western Lancet. The Weekly Medical Review, Chicago and St. Louis. The Blacksmith and Wheelwright, New York. National Live Stock Journal, Chicago. The Breeder's Gazette, Chicago. Cultivator and Country Gentleman, Albany. Indiana Farmer, Indianapolis. Truth, San Francisco. Weekly Drover's Journal, Chicago. The Chicago Tribune. The Medical Register, Philadelphia. Spirit of the Times, New York.

Obituary.

DR. GEORGE M. BEARD, the well-known physician and specialist in hypnotism and insanity, died January 23d in New York City after a short illness. Dr. BEARD was born in Connecticut May 8th, 1839. He graduated at Yale in 1862, and at the College of Physicians and Surgeons in 1866. Dr. BEARD was a voluminous writer, and during the latter years of his life gave his attention to hypnotism, or mesmerism. An article on trance and trance-like states in the lower animals from his pen will be found in No. 2 of Vol. II. of this Journal.

JOHN STACK, a Veterinary Surgeon, residing at Orange, New Jersey, was instantly killed, being struck by a locomotive.

THE deaths of Dr. CAMARERO, Director of the Veterinary School of Leon, Spain, and Dr. FR. LUNDBERG, director of the Stockholm Veterinary School, is announced.

Percentage of	Weight of	Volume of	Time of
100	100	100	100
80	100	100	100
60	100	100	100
40	100	100	100
20	100	100	100
0	100	100	100

19

Digitized by Google

MONTREAL VETERINARY COLLEGE.

The examinations of this institution, which have been in progress during the last ten days, were concluded March 29th by the final oral examination by the Board of Examiners appointed by the Council of Agriculture consisting of the following gentlemen: F. S. Billings, M. V.; Williamson Brydon, V. S., Boston, Mass.; C. J. Alloway, V. S., Montreal; J. A. Couture, V. S., Quebec; A. McCormack, V. S., Ormstown; Chas. Levesque, Berthier en haut, and Dr. Geo. Leclerc. The following gentlemen were present and assisted in the exercises: Hon. G. Ouimet, Commissioner of Public Instruction, in the chair, supported by Prof. R. P. Howard, Dean of the Medical Faculty of McGill University; Prof. Beaudry, representing Victoria University; J. M. Browning, Vice-President of the Council of Agriculture; Geo. Leclerc, Secretary, and Rev. Father Pilot, Mr. W. S. Blackwood, A. Sommerville and Casgrain, the Educational Committee of the Council; Prof. Osler, Prof. Daubigny, Dr. Sutherland Baker, and a large number of visitors.

Hon. Mr. Ouimet spoke of the good work done by the college, and proceeded to distribute prizes and diplomas, complimenting the recipients on their success.

The following students enregistered during the past session:

Wm. B. Abbey, New Bedford, Mass.; M. G. Blanchard, N. S.; A. A. Keys, Ont.; W. G. Johnston, P. Q.; Geo. Sangster, Q.; W. P. Robins, Q.; A. W. Clement, Mass.; W. F. Scott, Q.; James Brodie, Q.; C. J. Davis, P. Q.; C. D. Bancroft, Q.; E. P. Ball, Q.; B. A. Pomeroy, Q.; C. L. Morin, Q.; M. Piche, Q.; J. A. Bishop, Q.; R. W. Hopper, Q.; H. K. Durfee, Mass.; Charles G. Lamb, Mass.; Wm. Bell, Ont.; H. C. Kingman, Mass.; E. C. Crevier, Q.; A. Beauchamp, Q.; W. H. Klock, Ont.; John Magor, Q.; John Henry, Iowa; A. E. Cross, Q.; J. T. O'Donnell, Mass.; C. Drouin, Q.; J. Labelle, Q.; T. G. Brosseau; W. S. Renner; O. D. Fortin, Q.; J.

Lancot, Q.; R. Lapointe, Q.; Fred. Paquin, Q.; H. Pilon; C. P. Drake, Q.; A. C. Rouif, Q.; P. A. Gindun; T. Beauchamp; W. P. Mass.; Ed. W. Hoare, Man.; W. S. Mahon, W. I.; J. W. Sparks, Mass.

The following students passed in the undermentioned subjects in order of merit:

Botany, Prof. J. W. Dawson, McGill College—Scott, Durfee, Lamb, Mahon, Sparks, Magor, Keys and Abbey.

Chemistry, Prof. Girdwood, McGill College—Blanchard, Kingman, Ball, Davis, Cross and Mayo.

Physiology, Prof. Osler, McGill College—Blanchard, Ball, Kingman.

Materia Medica, Dr. James Bell, Veterinary College—Kingman, Bancroft, Blanchard, Ball, Cross, Davis, Klock.

Anatomy, M. C. Baker, V.S., Professor—Brodie, Bell, Clement, Pomeroy, O'Connell, Henry, Duncan, Robins, Bancroft.

Practice of Veterinary Medicine and Surgery and General Pathology, D. McEachran, F.R.C.V.S., Professor—Bell, Clement, Brodie, Henry, Pomeroy, Duncan, O'Connell, Bancroft and Robins.

Physics, Prof. Girdwood, McGill College—Lamb, Durfee, Scott, Hoare, Mahon, Magor, Abbey, Keys and Sparks.

FRENCH CLASSES.

Botany, Prof. Roy, Victoria College—A. Beauchamp, T. Brosseau, Fortin, Lapointe, Piche, Rouif, Turcot.

Physiology, Prof. Beaudry, Victoria College—Morin, Labelle.

Chemistry, Prof. Munier, Victoria College—Morin, Labelle.

Obstetrics, Prof. M. Daubigny, V.S., Veterinary College—Crevier, Paquin, Drouin, Pilon.

Materia Medica, M. Daubigny, Veterinary College—Paquin, Crevier, Drouin, Pilon.

Anatomy, M. Daubigny, Veterinary College—Paquin, Crevier, Drouin, Pilon.

Practice of Veterinary Medicine and Surgery, and General Pathology, M. Daubigny, V.S.—Paquin, Crevier, Drouin, Pilon.

The following candidates passed the examinations successfully and received the diploma of the College: Messrs. Brodie,

Bell, Clement, Crevier, Henry, O'Connell, Pomeroy, Paquin and Robins.

PRIZES.

The following prizes were awarded English classes :

Seniors—best general examination in all subjects—Silver medal, the gift of the Council of Agriculture, won by Jas. Brodie.

Practice of Medicine and Surgery—Valuable Microscope, the gift of David Morrice, Esq., won by Wm. Bell ; second prize, A. W. Clement.

Anatomy—First prize, James Brodie ; second prize, Wm. Bell.

Practical Dentistry—Instruments, the gift of Williamson Dryden, Esq., V.S., won by H. J. O'Connell.

Juniors—Materia Medica—H. C. Kingman.

Anatomy—First prize, H. C. Kingman ; second prize, M. G. Blanchard.

Practice of Medicine and Surgery—First prize, H. C. Kingman ; second prize, E. P. Ball.

Botany—Gift of Prof. Dawson, won by W. F. Scott.

FRENCH CLASSES.

Best general examinations, silver medal, the gift of the Council of Agriculture, won by Fred. Paquin ; second prize, valuable instruments, the gift of L. H. Massue, Esq., M. P., President of Council of Agriculture, won by E. C. Crevier.

Obstetrics, the gift of M. Daubigny, won by E. C. Crevier.

Anatomy, the gift of Geo. Leclerc, M. D., won by Fred. Paquin.

At the conclusion of the exercises Mr. Billings, of Boston, complimented the Dominion on having in the Veterinary College of Montreal a gentleman at its head who, more than any one else, combined in his teaching and daily life science and practice, and whose honest efforts were devoted to the elevation of the profession.

Prof McEachran, was next called upon, and took advantage of the occasion to compliment the students on their honest hard work during the session, congratulated the successful and sympathized with those who had failed in passing the severe

examinations to which they had been subjected. He pointed out advantages of a high standard of education on account of the rapid progress of the profession. No profession holds out, said he, more brilliant prospects than did the one they now entered, but they must not expect to gain success without a struggle, but by perseverance they were sure to succeed. He wished them all success. He next paid a high tribute to McGill and Victoria Colleges, thanked those gentlemen who gave prizes, especially David Morrice, L. H. Massue, Williamson Bryden and others, also the examiners who had come long distances to assist them, the Council of Agriculture and the Government of Quebec for their valuable support, and those gentlemen who had assisted them at the examinations.

Prof. R. P. Howard, Dean of the Medical Faculty of McGill, next addressed the students and graduates, complimenting them and their teachers on their success, and indicated that the Faculty seeing the necessity for extending the field of study had decided to add to their College a chair of comparative pathology, which they hoped soon to see accomplished. He could say for the Medical Faculty that they had always great pleasure in doing all they could to assist the Veterinary College, which was looked upon by them as one of the most useful institutions in the province.

Prof. Beaudry next followed in a similar strain for Victoria College.

Dr. Osler, J. M. Browning and others followed in eulogistic remarks of the College and its Principal.

The proceedings terminated by a vote of thanks to Hon. Mr. Onimet.

A meeting of the Veterinary Medical Association was held immediately after, when the diploma was conferred on Wm. Bell, Jas. Brodie, A. W. Clement, E. C. Crevier, Jno. Henry, T. J. O'Connell, B. A. Pomeroy, Fred. Paquin, Paul Paquin, also on Mr. F. S. Billings and Prof. Daubigny.

Account of the examination of this College was received too late to be inserted under the proper heading.

Progress of Veterinary Science.

ASCARIS MYSTAX IN CATS.—There is here (Milton, Ross-shire) an epidemic among cats. Symptoms: Slight cough, abstinence from every kind of food, vomiting up worms, and death in from forty to sixty hours after first symptoms. The writer got rid of the worms in two cases with castor oil, but both cats died like others that had no medicine. In the winter of 1879 many cats died here in the same way. [Give the cats two grains of santonine in a little milk as soon as any signs of illness appear.—Ed.]—*Field*.

INOCULATION OF MONKEYS WITH SYPHILIS.—Dr. Martineau has succeeded in inoculating a monkey with the serous fluid from a syphilitic chancre. The inoculation was made upon the monkey's penis, and twenty-eight days afterward two indurated chancres were found at the point of inoculation, and a few days later there was discovered an indolent enlargement of the inguinal glands.—*Weekly Medical Review*.

SHEEP FLUKE.—Reports are coming in that sheep are dying in all parts of England from attacks of that dreadful parasite, the fluke. Mr. Robert I. Wells, a good authority, states the following: "Out of 100 cases under my special treatment, in which salt, iron, sulphur, podophyllin, etc., were carefully and regularly prescribed in alternate doses, every one died, while out of the same number treated with pure vegetable charcoal in their food daily for six weeks, ninety-seven recovered, and these were very bad to commence with."—*Drovers Journal*.

ETIOLOGY OF GLANDERS.—In the Berlin Imperial Health Office, investigations have been made into the etiology of glanders, which have resulted in the discovery of the micro-organism of this disease. The newly discovered organism was subjected to "pure" cultivation for a series of generations, after which the disease was produced in a horse by inoculation with the germ thus cultivated. The investigations were carried out under the directions of Dr. Loeffler and Professor Schütz, of the Berlin Veterinary School. The discovery is of immense importance.—*Veterinary Journal*.

SWINE PLAGUE.—A letter was read at a recent meeting of the Académie des Sciences from M. Pasteur, giving an account of his progress in some researches in which he is at present engaged in the district of Vancluse. He has gone there to investigate a disease of pigs, which in one valley of the Rhone, has recently been fatal to 20,000. The disease is called "le rouge des porcs;" and M. Pasteur announces that he has discovered its cause to be a very minute organism, which, in point of size, resembles that of chicken cholera. It differs, however, in its physiological properties since it has no action on fowls, but it is fatal to rabbits and pigs, especially to white pigs. M. Pasteur has convinced himself, by experiments, that one attack affords protection against another, and he has succeeded in inoculating pigs with organisms which have been weakened by culture, and in thus rendering these animals insusceptible.—*Veterinary Journal*.

INFLUENCE OF DIGITALINE ON THE HEART OF THE TERRAPIN.—Messrs. H. H. Donaldson and M. Warfield, of the Johns Hopkins University, made some preliminary investigations as to the action of this drug on the heart of the mammal. The results of previous observers were so contradictory and open to so many objections that a fresh study of the action of the drug upon the hearts of cold-blooded animals seemed desirable before proceeding to work with the hearts of dogs or rabbits.

The chief results are: 1. When the heart is doing normal work digitaline decreases that work. 2. There is a rough relationship between the size of the dose and the extent of the disease. 3. With small doses of digitaline the pulse rate is at first increased. 4. The diminution in the heart's work is much more dependent on the strength of the dose at any given time than on the total amount of the drug administered. A large amount given in several hours has much less effect than a smaller amount given in a few minutes. Therefore the theory that digitaline has a cumulative action takes experimental confirmation.—*Johns Hopkins University Circular*.

FIBRO-MYOMATA OF THE UTURUS OF THE SEA-LION.—At a meeting of the New York Pathological Society Dr. Liautard presented the uterum and its appendages removed from a sea-lion belonging to Barnum's collection of animals. The animal had exhibited no special symptoms of disease, and had a good appetite up to twenty-four or thirty-six hours before death. At the autopsy there were found double pneumonia and parasites in the small intestine, and at the junction of the left horn with the body of the uterus there was found a large tumor which presented the gross appearances of fibromyoma as it occurs in the human subject.

Dr. Liautard also presented a cyst containing hair which he had removed from the side of a saddle-horse, a little posterior to the left shoulder. At that point there was a movable elongated tumor, about the size of an English walnut. After making an incision through the skin the tumor was easily enucleated, and when opened it was found to contain a large amount of curly hair, mixed with sebaceous material. Another tumor, similar in feel, and about three inches in length, was removed from another part, and on opening it, it was found to contain material which presented the appearance of pus. He had been unable to find the record of any case of cyst containing hair occurring in the horse. *Medical Record*.

TEST FOR IODOFORM.—The *Medical Record*, quoting from the *Berliner Klin. Woch.*, says that in a prolonged discussion on the utility and disadvantages of iodoform, at a recent meeting of the Berliner Medicinische Gesellschaft, Dr. Steinauer had occasion to make some practical suggestions. Iodoform, he stated, when applied locally, was always absorbed, though very slowly, and its action was a cumulative one. Hence it was advisable to remove the dressing after five or six days, and substitute some other antiseptic agent, as carbolic acid, thymol, or salicylic or boracic acid. Iodoform appears in the urine in the form of iodine, in combination with an alkali. Its presence can readily be determined by adding nitric acid and starch to the urine, and shaking the mixture, when the characteristic blue color appears. We have thus a simple means of estimating the amount of iodoform absorbed, and can judge whether danger of poisoning exist or not. The lethal dose in man is difficult to determine. In animals it is stated to be as follows: Guinea pigs, thirty grains; rabbits, forty-five grains, and dogs, one drachm.—*Chicago Medical Review*.

TINCTURA IODOFORMI COMPOSITA.—Under this title, Dr. G. Beck described in his "*Therapeutical Almanac*, 1880-81," a very useful formula for a solution of iodoform and iodide of potassium, which can not only be taken internally (three times a day, fifteen drops in sugared water), but is

in place in all cases where the ioline treatment seems to be adapted for external application, and is capable of causing a radical disappearance of tumors of various kinds, as also of inflamed glands, etc. The original formula—iodoform, 1 part; potassii iodid., 70 parts; glycerin, 70 parts; spir. vini. rect., 100 parts—is pharmaceutically incorrect, because the iodoform is not completely dissolved in this solution. The following modification is recommended, which, while not lessening any of its effects, represents a complete solution, to which Balsam of Peru is added as a corrigens to the iodoform :

R. Iodoform.....	8 grms.
Balsam Peru.....	8 "
Solv. in spir. vin. rect.....	20 "
Solutioni admisc.	
Kalii iodid.....	70 "
Ft. solut. in aquæ dest.,	
Glycerin pur.....	AA 35 "
Filter.	

MALE FERN.—Dr. Frederick Manson, having observed the effects of male fern upon a dog, reports the result in the *British Medical Journal*. The dog was suffering markedly from tape worm. A drachm of the fluid extract was administered. Shortly afterward the dog began to stagger in attempts to walk, and a little later, when stood upon its feet, fell over upon its back and was unable to rise. Muscular power was completely gone. The dog remained limp and paralyzed for three days, and there was no intestinal movement during that time, in spite of cathartics. From this time onward recovery was gradual.—*Chicago Medical Review*.

OSSEOUS DEFORMITIES IN THE LOWER ANIMALS.—At the last meeting of the Pathological Society, Mr. Sutton exhibited a highly interesting series of deformed, diseased, and distorted bones which he had obtained from animals dying in the gardens of the Zoological Society. The animals which furnished the specimens were a lizard, a cursorial bird, and four monkeys; and according to the theory advanced by the exhibitor, the specimens illustrated diseased conditions, common also to man, that is to say osteomalacia, osteoporosis, cranio-tabes, and osteitis deformans. By referring all these bone changes to various phases of chronic inflammation, and by including rickets also in this classification, Mr. Sutton appeared to challenge criticism, and there were, no doubt, many members of the Society present who could have cast much light on the subject. Unfortunately, however, the reading of the paper on bone diseases, and the exhibition of specimens, was preceded by a good deal of other business, so that the President was obliged to deprecate prolonged discussion; consequently no attempt was made to appraise the true value of the facts and theories put forward by Mr. Sutton and Mr. Barwell. The subject is well worthy of the best thought and time of the Society, which would confer a great benefit, not only on pathology, but on practical medicine, if it could reduce the classification and nomenclature of bone diseases leading to deformity, to some sort of order.

DIPHTHERIA OF THE BLADDER WITHOUT INFECTION IN A RABBIT.—In order to determine the time within which fibrinous casts appear in the urine in retention of this fluid, Dr. Aufrecht instituted some experiments in a rabbit. The prepuce was closed with adhesive plaster, after twenty-four hours and the urine analyzed. The process was repeated four times, each time retention being continued for twenty-four hours. Shortly after the rabbit died. Upon the mucous membrane of the bladder were found several patches of a dirty gray color, resembling exactly diphtheric false membrane. Under the microscope was seen a large number of micro-organisms, some round and some rod-shaped. The rods were either single or in pairs, and often were united in a long chain. The urethra presented

a normal appearance. From this experiment Aufrecht concludes that bacteria of disease may be developed in the bladder without, as has been hitherto supposed, gaining entrance through the urethra. The condition of the canal in this case, he states, precluded any such source of infection. He thinks that this lends weight to the theory of Billroth and others, that the bacteria existing normally in the same tissues may, under proper conditions, develop into noxious organisms. But, especially, he thinks that it confirms his previously expressed opinion, that it is not the mere presence of bacteria, but their retention and development in the organs, that give rise to infectious diseases.—*Allgem. Med. Central-Zeitung*.

EQUINE SCARLATINAL VIRUS AS A PROPHYLATIC AGAINST HUMAN SCARLATINA.—The *Medical Record* of March 24th, contains an article with the above title, written by J. W. Stickler, of Orange, N. J., which places before the medical profession interesting and important views on the subject of inoculation to prevent scarlatina.

What Dr. Jenner has accomplished in modifying or preventing small pox by a subcutaneous use of vaccine, Dr. Stickler may do in scarlatina by grafting on to the human tissues the equine scarlatinal virus.

Having fully established the identity of equine with human scarlatina, he made several satisfactory experiments, first on rabbits and afterwards on twelve human patients who never had scarlatina. The result of these experiments proved the entire safety of using subcutaneous virus direct from the horse and also that this vaccination protects against the malignant form of scarlatina as developed spontaneously in man.

INTESTINAL OBSTRUCTION.—In a recent number of the *Kennel Gazette* were quoted instances of dogs being killed by intestinal obstruction caused by swallowing corks. Referring to these cases a correspondent of the above journal furnishes in this month's number some valuable notes regarding the successful treatment of similar mishaps in his own kennel. The subjects in all instances were hounds fed principally on the refuse from the table of a large establishment, where the servants throw pretty well anything into the tub provided for the dogs' food; amongst other things peach stones, plum stones, and corks were constantly to be discovered. The features observable were, that the dogs became dull and heavy, disinclined to feed, and walked about with backs arched and their tails tightly held between their legs; but the most diagnostic symptom was that they turned their head to the side where the pain evidently existed, and licked it. Constipation was present, although at first shreds of mucous was passed after much straining. The treatment consisted of first passing a tube up the rectum, about six inches, and injecting, by means of an ordinary enema syringe, a pint of warm olive oil. After removing the tube the rectum was plugged with a piece of sponge the size of a goose's egg, to which was attached a string. This was retained for several hours, until the dog became very uneasy, when the sponge was withdrawn by means of the string. An evacuation followed, in which was the cork. "I have," says the writer, "had four cases, in one of which a peach stone was passed. All were treated in the same manner, and are still alive. One thing to be observed is, to pass the tube as far as possible; this must be done gradually and gently. It is quite useless to give the dog purgatives, as this only does more harm than good by causing the obstacle to be forced lower, and to become more impacted in the folds of the intestine, the object being to inflate the intestine round the obstacle, and thus to dislodge it. The same treatment I have found very useful in ordinary constipation, and always effectual without causing the distress to the dog and loss of strength produced by purgatives."—*Land and Water*.

PASTEUR AND KOCH.—Dr. Koch has published his reply to Pasteur, as he announced that he would do at the session of the Geneva Congress. Koch takes the ground that "it is not yet proved that all infectious diseases are parasitic in character, but that the parasitic character must be proved, in each case separately." As a model of how such proving should be done, he

modestly cites his own experiments with the tubercle bacillus. He criticises the methods adopted by Pasteur in studying rabies and Glanders, and denies that that experimenter's conclusions regarding them have been established. Koch also claims priority in regard to the discovery of the cause of anthrax, and denies Pasteur's statements regarding the mode of propagation of that disease (i. e., by the agency of earth worms.) Regarding preventive inoculations, Koch states that while some bacterial diseases may be so prevented, there are others, like gonorrhœa and erysipelas (?) against which one cannot be protected. Koch considers that Pasteur's claims for the value of preventive inoculations are exaggerated, and that his methods are cumbersome and defective. It remains now for Pasteur to say a word.—*Med. Record.*

THE NEWLY DISCOVERED PROPHYLACTIC VACCINE FOR "ROUGET;" OR PNEUMEO-ENTERITIS OF THE PIG.—M. Pasteur has just communicated to the French Academy, through M. Bouley, the results of his recent experiments upon the pig, made with a view to study the prophylaxis of the disease, which we have named in the caption to these lines, and which so deeply affects the interests of the porcine species. The practical value of this discovery is only comparable to the great benefits of charbon preventive; and like experimental deductions which gave birth to the prophylactic inoculations in the latter disease, is the offspring of the renowned culture and alternation process of the illustrious discoverer.

Rouget, or pneumo-enteritis of the pig, is a contagious and extremely active malady, which has proven a real plague in all those countries in which pork-raising is one of the established agricultural pursuits. In the United States, the mortality from this disease amounted to 900,000 swine; in France, 20,000 of these valuable animals were killed by this pest, the loss sustained by the pork raisers, in the Western departments, alone, amounting to three millions of francs.

M. Pasteur, and his colleagues have carefully studied the microbe which causes this disease, and have discovered that it is not the bacillus described some years ago by Dr. Klein.

They cultivated this fungus, and submitted it to the attenuation process, through which they have obtained a real vaccine, that when inoculated invests a permanent and preservative immunity upon the experimented animals. The experiments already made are numerous, and conducive enough to dispel any doubts as to the efficacy of this prophylactic vaccination. At present, preparations are being made to carry out a final and decisive test, on a large scale, next year, when the hog-pest will begin to make its ravages in the infected localities.—*Journal de Médecine et de Chirurgie Pratiques.*

EXPERIMENTS ON ANIMALS WITH MALE-FERN AND KAMALA.—**A.**—July 28th.—Gave a pig, weighing $1\frac{1}{2}$ cwt., 1 oz. Ext. Fil. Maris Liq. at 4 P. M.

July 29th, morning.—Pig has refused food and water; has passed one or two natural stools.

4 P. M.—Gave $1\frac{1}{2}$ oz. Ext. Filicis, with 3 drs. Kamala. Pig died within two minutes of administration.

Autopsy. 30th, 8 A. M.—External surface of stomach intensely congested; mucous membrane, cardiac, and slightly so liver, lungs kidneys and all solid viscera intensely congested. Bladder full of red color urine. Right heart full of blood containing a large, firm, partially adherent clot; left, empty, but containing three small clots. Death was evidently due to the first dose, the immediate cause being disturbance of clot in right heart during the animal's struggles when second dose was administered. A small quantity of second dose found its way into the trachea, probably during death struggle, the milk being found in stomach.

B.—July 30th.—Gave a small pig $\frac{1}{2}$ oz. Ext. Fil. Maris. Death in two hours. Right heart disturbed; left, empty and contracted. Slight congestion of lungs. None of other organs.

C.—July 30th.—Gave a second small pig $\frac{1}{2}$ oz. Ext. Fil. Liq. Refused food, became giddy, and recovered after twenty-four hours.

D.—Gave a dog 6 drs. fern oil, and 6 drs. more after four hours. Dog vomited once. No ill symptoms.

E.—Gave a dog 6 drs. with $1\frac{1}{2}$ drs. Kamala. Vomiting and purging. Death in twelve hours. Right heart dilated and full of blood; left, empty. Mucous membrane, stomach and small intestines congested in patches; lungs congested. Other organs normal.

F and *G.*—Gave two smaller dogs $\frac{1}{2}$ oz. Ext. Fil. Liq. Each dog got out during the night, but have not been seen since. The two dogs, *D* and *E*, were large Pariahs, the size of a retriever, the other two about half that size. —*The Veterinarian.*

THE MOVEMENT OF BOWELS IN HEALTH AND DISEASE have lately been carefully studied by Nothnagle in the *Deutsche Zeitschrift für Kin Med.*, the conclusions he has arrived at are of great interest. The abdomen of animals was opened under an anæsthetic, and the body placed in a one-half per cent. saline solution kept at a temperature of 100.2 Fahr. The result of this was that all movements in the bowels, with the exception of the duodenim ceased, but if the intestines were dilated with fluid or gas violent peristaltic action resulted. The contractions are all from before backwards, anti-peristalsis never occurs in a normal intestine. The effects of rectal injection showed that warm water remained where it was thrown, never being carried forwards, but it increased slightly the peristaltic actions. Iced cold water caused contraction of the gut and passed a short distance forward; olive oil acted in a similar manner, but a strong solution of chloride sodium was carried up by forward contraction as high as the cæcum, taking the fæces with it. Solutions of nitrate potash, bromide potassium and weak ones of sulphate of copper behaved in a similar manner.

Ligaturing a small intestine produced, first of all, contractions of the bowel anterior to the ligature, but these shortly ceased, and the part became paralyzed. By artificially inducing enteritis it was found that the peristaltic movements were greatly increased, and the inflamed portion became filled with fluid, probably inflammatory products, but after the lapse of forty-eight hours the condition was different, the bowel was now motionless.

In intussusception, Nothnagle noted that it occurred from before backwards, a contracted portion passing into a dilated one. An invagination of the colon was distinctly removed by the antiperistaltic movement brought about by the injection per rectum of chloride of sodium. The influence of morphia on the movements is most interesting, a small quantity prevents a salt of soda causing its usual contractions, but a large quantity of morphia be injected. Then the salt of soda not only produces its usual effect, but in a much more violent manner.

The results of these experiments are of great practical importance, rectal injections of chloride of sodium may be of great service in impaction of the bowels and intussusception. The paralyzed ligatured bowel shows the injurious effects of purgatives in intestinal obstruction, these, by increasing the peristalsis, carry the contents of the bowel towards the seat of obstruction, and more quickly bring about the paralysis which follows distension. The movements in enteritis are more instructive, and it would appear that in the early stages of this disease the contents of the bowel are moved with increased rapidity through the inflamed portion. Morphia seems to act on the bowels as digitalis does on the heart, namely, stimulates or paralyzes the inhibitory nerve.—*Quarterly Journal of Veterinary Science in India.*

MEDICINE AS PRACTISED BY ANIMALS.—M. G. Delaunay, in a recent communication to the Biological Society, observed that medicine, as practised by animals, is thoroughly empirical, but that the same may be said of that practised by inferior human races, or, in other words, by the majority of the human species.

Animals instinctively choose such food as is best suited to them. M. Delaunay maintains that the human race also shows this instinct, and blames medical men for not paying sufficient respect to the likes and dislikes of the patients, which he believes to be a guide that may be depended on. Women

are more often hungry than men, and they do not like the same kinds of food; nevertheless, in asylums for aged poor, men and women are put on precisely the same regimen. Infants scarcely weaned are given a diet suitable to adults, meat and wine which they dislike and which disagree with them. M. Delaunay investigated this question in the different asylums of Paris, and ascertained that children do not like meat before they are about five years of age. People who like salt, vinegar, etc., ought to be allowed to satisfy their tastes. Loraln always taught that with regard to food, people's likings are the best guide.

A large number of animals wash themselves and bathe, as elephants, stags, birds, and ants. M. Delaunay lays down as a general rule, that there is not any species of animal which voluntarily runs the risk of inhaling emanations arising from their own excrement. Some animals defecate far from their habitations; others bury their excrement; others carry to a distance the excrement of their young. In this respect they show more foresight than man, who retains for years excrement in stationary cesspools, thus originating epidemics.

If we turn our attention to the question of reproduction, we shall see that all mammals suckle their young, keep them clean, wean them at the proper time, and educate them; but these maternal instincts are frequently rudimentary in women of civilized nations. In fact, man may take a lesson in hygiene from the lower animals.

Animals get rid of their parasites by using dust, mud, clay, etc. Those suffering from fever restrict their diet, keep quiet, seek darkness and airy places, drink water, and sometimes even plunge into it. When a dog has lost its appetite, it eats that species of grass known as dog's grass (*chiendent*), which acts as an emetic and purgative. Cats also eat grass. Sheep and cows, when ill, seek out certain herbs. When dogs are constipated they eat fatty substances, such as oil and butter, with avidity, until they are purged. The same thing is observed in horses. An animal suffering from chronic rheumatism always keeps as far as possible in the sun. The warrior ants have regularly organized ambulances. Latreille cut the antennæ of an ant, and other ants came and covered the wounded part with a transparent fluid secreted from their mouths. If a chimpanzee be wounded, it stops the bleeding by placing its hand on the wound, or dressing it with leaves and grass. When an animal has a wounded leg or arm hanging on, it completes the amputation by means of its teeth. A dog on being stung in the muzzle by a viper, was observed to plunge its head repeatedly for several days into running water. This animal eventually recovered. A sporting dog was run over by a carriage. During three weeks in winter it remained lying in a brook, where its food was taken to it; the animal recovered. A terrier dog hurt its right eye; it remained lying under a counter, avoiding light and heat, although habitually he kept close to the fire. It adopted a general treatment, rest, and abstinence from food. The local treatment consisted in licking the upper surface of the paw, to which he applied the wounded eye, again licking the paw when it became dry.

Cats also, when hurt, treat themselves by this simple method of continuous irrigation. M. Delaunay cites the case of a cat which remained for some time lying on the bank of a river; also that of another cat which had the singular fortitude to remain for forty-eight hours under a jet of cold water.

Animals suffering from traumatic fever treat themselves by the continued application of cold, which M. Delaunay considers to be more certain than any of the other methods.

In view of these interesting facts, we are, he thinks, forced to admit that hygiene and therapeutics, as practised by animals, may, in the interests of psychology, be studied with advantage. He could go even further, and say that veterinary medicine, and perhaps human medicine, could gather from them some useful indications, precisely because they are prompted by instinct, which are efficacious in the preservation or the restoration of health.—*British Medical Journal*.

FORM OF THE PULSE WAVE.—Messrs. W. H. Howell and F. Donaldson,

Jr., have recently made some observations upon the form of the pulse wave and the mean arterial pressure in a dog with patent *Ductus Arteriosus*. The dog was about to be killed when it was noticed that its cardiac action was abnormal. Prof. Donaldson examined the animal, and found the pulse rate greater and the cardiac impulse more marked than in normal dogs; also the apex of the heart extended much farther to the left, showing marked hypertrophy. Over the whole cardiac region he observed a loud, rasping, cardiac murmur, with the maximum of intensity over the base; also a slight murmur with the second round. Subsequent experiments made on the dog showed a normal arterial pressure, and no abnormality in sphygmographic tracings except an unusually marked diastolic murmur.

Prof. Tiffany made the post-mortem on the animal, and found that the *ductus arteriosus* had remained open, its calibre being at least equal to that of either pulmonary artery.

It is a fact of much interest that with such free communication between aortic and pulmonary circulations so good an average arterial pressure (as measured in the femoral artery) was maintained. It can only be explained by assuming (1) a compensatory increase in the force of the heart-beat; (2) an increase in the resistance of the pulmonary circuit; or (3) an increase in the total bulk of blood in the body. Whichever of these agencies was the effective one, the case is one of great interest as indicating the power of the animal body to adapt itself to unusual conditions of life. So far as the authors could discover only one similar case was previously on record.—*John's Hopkin's University Circulars*.

THE PREVENTION OF HYDROPHOBIA.—In 1862 Bourrel suggested that when the permanent teeth of a dog are well grown, the incisors and canine teeth can be blunted so as to render it impossible for a dog to inflict wounds on men or animals which might lead to inoculation with the virus of rabies. At the time his suggestion was much ridiculed, one journal suggesting that all dogs should be provided with false teeth. The question has been revived in the *Medical Press and Circular*, January 17th, 1883, by "a member of the Sanitary Institute of Great Britain."

"In general," says M. Bourrel, "it is a sharp pinching produced by the front teeth that causes inoculation; the skin is torn, or the bite draws blood. By blunting, or resection, sixteen obtuse surfaces are substituted for sixteen sharp points. Sporting dogs in the habit of tearing the game have been prevented from doing so by this measure, while the furious disposition of some dogs, such as watch dogs, which render them dangerous to every one, was softened, and brutes which would have to be destroyed were consequently allowed to live. Terriers have not ceased to kill rats after this blunting; they have only lost their power to kill cats, which is a happy result. The same operation disarms those bull-dogs that certain individuals have the creditable passion of exciting to fight; pet dogs have been operated upon without any inconvenience."

PASTEUR ON RABIES.—At a recent meeting of the Académie de Médecine M. Boulay communicated, in the name of M. Pasteur, a series of conclusions regarding rabies at which the distinguished investigator has arrived. The first two enunciated the familiar truths that the dumb madness and the furious madness, and, in short, all varieties of rabies, are caused by the same virus, and that the symptoms of rabies are extremely variable. It is assumed that the characters of the several cases depend on the points in the nervous system at which the effect of the virus is chiefly localized. In the saliva of rabid animals the virus is associated with several kinds of organisms, and the inoculation of the saliva may cause death in these ways, by means of the special salivary organisms, by excessive suppuration, and by rabies. The medulla oblongata of the human subject, as well as that of animals after death by rabies, is always virulent, and the virus is also found in all parts of the brain, and it persists even after putrefaction has set in. There are two methods of inoculation by which the period of incubation of rabies may be greatly shortened and the disease produced, not only rapidly but with cer-

tainty; one is by the injection of virus in the blood; the other is by trephining the skull, and placing the virus in the arachnoid cavity.

Rabies then come on at the end of six, eight, or ten days. M. Pasteur has met with some cases of the "spontaneous cure" of rabies, but only in cases in which the disease did not develop beyond the initial stage. In such a case, in which the early symptoms passed away, the disease has been known to return at the end of a certain time—as two months—and then to run the ordinary acute and fatal course. Mention is also made of the cases of three dogs inoculated in 1881; two quickly died from rabies; the third, after manifesting the early symptoms, recovered. The latter animal was inoculated by trephining in 1882 on two separate occasions, but without effect. M. Pasteur asserts that he now possesses four dogs which will not contract rabies, whatever the method of inoculation adopted or the proved virulence of the material employed. These facts he believes to be the first step toward the discovery of a method of the prevention of rabies by its inoculation. He confesses, however, that the end seems to be at present far distant.—*London Lancet*.

THE GERM OF HOG CHOLERA.—At a meeting of the Academy, held Dec. 4, 1882, Messrs. Pasteur and Thuillier presented the results of their researches on mal-rouge of Swine.

1st. Mal-rouge of Swine is produced by a special microb easily cultivated outside of the bodies of animals. It is very tenuous and resembles most that of the chicken cholera. Its form is also that of the figure 8. It has no effect on chickens but kills rabbits and sheep.

2. Inoculated in a pure state in the pig in almost inappreciable doses, it quickly produces disease and death with the characteristics habitual in spontaneous cases. It is especially fatal to the white race called perfected.

3. Dr. Klein published in London, in the year 1878, an exhaustive work on the Rouget which he calls pneumo-enteritis of the pig; but this author is mistaken as to the nature and properties of the parasite. He has described as a microb of the mal-rouge a Bacille (Samphire?) with spores more voluminous even than the bacteria of anthrax, very different from the true microb of Rouge. The Samphire of Dr. Klein has besides no relation with the etology of this disease.

4th. After having proved that the disease does not re-appear, the authors have practiced successfully inoculations preventing it from being fatal.

5th. Though new experiments are yet necessary, it is to be hoped that in a short time vaccination by the attenuated microb of the Rouget will become the safeguard of herds of Swine.

NEWS AND MISCELLANY.

NEW VETERINARY SCHOOLS.—The Russian Government has instituted a new Veterinary School at Lemberg, Poland. Dr. Lelfmann, of the Kazan Veterinary School, has been appointed Director, and Drs. Baranski and Kaydi Professors.—*Veterinary Journal*.

TEN THOUSAND dollars have been subscribed by Mr. Gillingham towards the endowment of a Veterinary School in connection with the University of Pennsylvania. A similar sum was previously contributed by Mr. J. B. Lippincott.

THE NUMBER OF VETERINARY SURGEONS IN THIS COUNTRY, according to the last census, is 2,130. Of these 1,457 are natives of the United States, 104 of Ireland, 156 of Germany, 252 of Great Britain, and 171 of other countries. According to a register prepared with much care by the *Journal of Comparative Medicine* only about one-half of these have degrees.

BITTEN BY A SQUIRREL.—Dr. W. G. Stedman, of Southington, Conn., was bitten last week in the hand by a pet squirrel; severe lymphangitis ensued, and it was feared he would lose his arm.—*Medical Record*.

COLD KILLS TRACHINÆ.—According to the experiments of Bonley and Gibrir, a temperature of 12° to 15° C. for five hours will destroy trachinæ.—*Chicago Medical Review*.

A CONTRIVANCE TO PREVENT "BALLING" OF HORSES FEET.—The English *Live Stock Journal* gives an account of a contrivance adopted by Col. Thompson, of the Fife Hounds, for the protection of the horse's feet from snow, from which veterinarians may take a hint. Col. Thompson takes a sheet of gutta-percha about a quarter of an inch thick, cuts out a set of plates a little larger than the hoof inside the shoe, softens them in hot water, and moulds them inside the shoe over the frog, so that a face of gutta percha touches the ice and snow, and "balling" with snow impossible. These plates remain until the end of bad weather.

SMALL-POX IN BIRDS.—Dr. William Gayton, Medical Superintendent of the Small-Pox Hospital at Homerton, England, writes (*British Medical Journal*) concerning this subject as follows:

"Apropos of 'small-pox in birds,' I may, perhaps, mention the fact that some years ago a former steward of this hospital was in the habit of breeding a large number of canaries. As these arrived at maturity it was a common occurrence to find many of them dead, and presenting evidence of having suffered from some eruptive disease. It was further observed that, when the hospital contained a somewhat large number of patients, the mortality among the birds increased, and *vice versa*."

PHTHISIS CONVEYED FROM DOGS TO MAN.—Dr. E. G. Janeway relates a number of cases of phthisis (*Archives of Medicine*) illustrating its possible contagiousness. Among others was the case of a phthisical young man who kept a pet dog. He was accustomed to sleep with the dog nestling in his arms. The animal became affected with a cough and subsequently died. Another dog shared the same fate; a third dog suffered from a cough, but its owner died of phthisis and the dog subsequently recovered.

LOSS OF CUD.—Loss of cud or suspension of rumination in cows is due to indigestion, from inaction of the muscular coats of the stomach. The remedy is to clear the bowels and stomach of the gathered indigested matter by a brisk purgative; for instance, a quart of linseed oil or twenty ounces of Epsom salts, and then to give some easily digested and laxative food, as bran mash or linseed meal steeped in water twelve hours. On the first appearance of the suspension of rumination this course should be pursued, as it is usually due to overfeeding, and the bowels require to be relieved before any change can be procured. Continued loss of cud ends in impaction of the stomach with disorder of the liver and kidneys and a probable serious attack of fever.

ONTARIO VETERINARY SOCIETY.—The fall term examinations of the Ontario Veterinary College, Toronto, were concluded Dec. 21st, 1882, when the following students passed a highly creditable examination, and were duly awarded the diploma of the council: C. W. Stone, Detroit, Mich.; H. G. Marshall, Dungannon, Ireland; S. G. Reed, Rushsylvania, Ohio; F. Fisher, Baillieboro, Ont.; W. F. Kidd, Cookstown, Ont.; Ward Woodhull, Angola, Ind.; H. H. Clement, Coldwater, Mich.; George E. Ferling, Indianapolis, Ind.; I. N. Perdue, Wingham, Ont. C. W. Stone, H. H. Clement and I. N. Perdue were awarded honors.

A REPORT OF THE TREASURY CATTLE COMMISSION, which was sent to the House recently, describes the sites selected for quarantine stations for imported cattle at Portland, Boston, New York and Baltimore. The report says that "it is vain to hope that England will remove the restrictions imposed so long as we fail to show that the last vestige of infection has been wiped out from our land," and, further, "that nothing short of the absolute and undeniable extinction of this disease in the United States will reopen the British market to our live cattle, and save us those millions that we are now every year prodigally, and we might almost say insanely, throwing away." The commission estimates the sum required to stamp out the lung plague at \$2,000,000, and recommends the requisite legislation. The governing principle in all their recommendations is that the Federal Government shall forbid the movement of store cattle out of any infected State, Territory, or district except after a quarantine such as is now imposed on the cattle imported from infected foreign countries.

A HOSPITAL FOR ANIMALS.—The Department of Agriculture has leased a piece of ground near the boundary line of the north-eastern section of the city, to be used as an experimental farm and hospital in connection with investigations of diseases of animals. The grounds are being put in order and buildings erected thereon. Dr. D. E. Salmon, who has for several years been employed by the department in the investigation of diseases of cattle, swine and poultry, will arrive in Washington about May 1st to take charge of the work. Dr. Salmon will bring with him a number of cattle and sheep, and the experiments will begin soon after his arrival. The Pasteur system of inoculation will be adopted, with such additions and qualifications as have been suggested by Dr. Salmon's own discoveries while engaged in investigation at his farm near Asheville, N. C. The investigations now to be made will be on a much larger scale than any heretofore attempted by the department, and will be conducted with the view of ascertaining the origin, causes and nature of the Texas cattle fever, pleuro-pneumonia, and hog and chicken cholera, together with means of preventing and curing these diseases.

TABLES IN COMPARATIVE PHYSIOLOGY.—We call the attention of our readers to the very valuable compilation of facts in Comparative Physiology found elsewhere in the JOURNAL. It is a noteworthy fact that hitherto if a person wished to know the pulse, temperature, respiration, urine amounts, &c., of the domestic animals, the facts could not be obtained except by consulting works in German or French. Not long ago a whole series of experiments was vitiated because the experimenter did not know the normal temperature of the rabbit. Most of the important facts needed for practical

reference are embodied in the tables now published. These tables will be sold separately by the Publisher, Mr. W. E. Jenkins. Price, 10 cents.

THE VIVISECTION QUESTION commands much attention abroad. In Sweden the Government has decided not to prohibit vivisection in that country, in spite of the appeal made to them by the Diet in reference thereto last session. In Denmark the Society for the Protection of Animals at Copenhagen, which is under the patronage of the King of Denmark, offers two prizes, one equivalent to £40 and the other to £80, for the best essays upon the possibility of replacing vivisection in physiological research by experiments upon the bodies of animals recently killed.

A HORSE CALLS ON A DOCTOR.—A reliable friend tells us about a horse that felt sick in the night, and, breaking out of its stable, made its way to the stable of a veterinary surgeon who had before treated the animal for sickness. It stood there several hours awaiting the opening of the stable in the morning, and when admitted soon fell dead.—*Saginaw Courier*.

INTELLIGENCE IN ANIMALS.—Mr. Romanes remarks in his book that there are few recorded instances of intelligence in bears; the following facts may therefore be worth recording: In the Clifton Zoological Gardens there are two female polar bears, between 2½ and 3 years, which came here quite young. One of these shows remarkable intelligence in cracking cocoa-nuts. A nut was thrown in the tank; it sank a long way, and the bear waited quietly till after some time it rose a little out of her reach. She then made a current in the water with her paw, and thus brought it within reach. This habit has already been several times noticed in polar bears. She then took it on shore and tried to break it by leaning her weight on it with one paw. Failing in this, she took the nut between her fore paws, raised herself on her hind legs to her full height, and threw the nut forward against the bars of the den, three or four feet off. She then again leaned her weight on it, hoping she had cracked it, but failed again. She then repeated the process, this time successfully. The keeper told me she employed the same method to break the leg-bone of a horse. That this is the result of individual experience, and not of instinct, is clear from the fact that her companion has not learned the trick of opening them thus, nor could this one do it when she first came. The method of throwing it is precisely similar to that adopted by the Cebus monkey described by Mr. Romanes.—*Nature*.

A CASE OF FILARIA OCULI OCCURRING IN BOTH EYES OF A HORSE.—A five year old horse was found to have a worm in the left eye. This was successfully removed, and almost before the eye had recovered a worm was discovered in the opposite one. This was also successfully operated on. This case is worthy of record only on account of the occurrence of a worm in both eyes. I have never heard of a similar case. The patient did well, and there was no ill effects.—*Quarterly Journal of Veterinary Science in India*.

BACTERIA having been found to be the fruitful cause of many diseases, M. Martineau now claims to have discovered that of syphilis. He made some experiments by cutting out a hard chancre and immersing it in culture bouillon of Pasteur. In this bacteria developed, and some of it was injected into the tissues of a pig near the penis. By the next day similar bacteria were found in the blood of the animal, and in a month there was a syphilitic eruption on the skin, with falling out of the hair. He then took some of the serum from another chancre and inoculated a pig with it. On examining the blood four days after, bacteria like those in the first experiment were found and in fourteen days a syphilitic papular eruption appeared on the skin. The bacteria found in the blood of these two pigs were then cultivated, and some of the fluid injected underneath the skin of a pig and a kid. Repeated examinations of the blood of these animals have failed to show the presence of bacteria, showing that they cannot be transmitted from one animal to another.—*Weekly Medical Review*.

THE JOURNAL

OF

COMPARATIVE MEDICINE AND SURGERY.

VOL. IV.

JULY, 1883.

No. 3.

ORIGINAL COMMUNICATIONS.

ART. XVIII.—ACTINOMYKOSIS.

Condensed from the writings of Doctor George Fleming in the "Veterinary Journal," and Prof. J. Wortley Aze in the "Veterinarian."

BY J. O'LEARY, M.D.

THE progress of pathological research is continually demonstrating the mighty part played by microscopic vegetable organisms in the production of disease in plants and animals, generally leading to their destruction, more or less rapidly. The feeblest and smallest as well as the largest and most powerful are alike exposed to the ravages of these invading, relentless foes, whose attack is all the more destructive because it can seldom be detected at its outset.

The immense destruction caused by minute parasitic fungi upon cereal and other useful plants, is only too often experienced by agriculturists and others. The mildew of the wheat, for instance, arises from the attack of a small fungus, "*Puccinia graminis*." The disease called "smut," attacking the flower of the wheat, is the produce of a minute parasite, "*Uredo segetum*;" while "bunt," involving the seed itself, is caused by

another parasite, "*Uredo foetida*." "Ergot," produced by "*Spermadia Clavus*," attacks rye: and many other destroying fungi, whose existence in plants can only be realized by their ravages, and their presence by means of a microscope, are known to those who have made them a special study.

The lowest as well as the highest animals are similarly the victims of these almost impalpable organisms. The wonderful revelations made by the microscope lead us to believe that those diseases which are included in the group designated "Zymotic" owe their production to vegetable germs; and other maladies not comprised in this class have already been discovered to be due to these microphytes—Anthrax, Tuberculosis, Rabies, etc.

History.—As far as the pathology of Actinomykosis is concerned it is a new disease. For a long period it had been observed that the ox tribe was affected with a certain disease of the bones and soft tissues of the head popularly called in Germany "*Ladendruck*," "*Wurm*," etc., and in Italy "*Mal del rospo*" and "*Trutta*," or Tuberculosis of Tongue. Among veterinarians the disease was looked upon as "*Osteosarcoma*," "*Tuberculosis*," "*Sarcomatosis*," "*Lymphoma*," etc.

In 1877 Bollinger drew attention to a disease of cattle which he asserted was not infrequent among them, and which consisted of a kind of new formation tumor, that appeared on the upper or lower jaw, in the alveoli of the molar teeth, or sprang from the spongy tissue of the bones, displaced the teeth, and in growing invaded and destroyed the healthy tissues. After some time the round, conglomerate luxuriant growths generally became puriform or ichorous and ulcerated, producing abscesses and fistula, and sometimes increased to the size of a child's head. The progress of the disease was gradual, and interfered with mastication when it advanced to a certain stage; this led to emaciation, and to prevent loss from this cause the owners of the cattle generally had them destroyed before this stage was reached. In examining fresh tumors, Bollinger discovered (in three cases) amongst the dense connective tissue conglomerate masses or nodules of various sizes from that of a walnut to a hen's egg, of soft consistence, pale yellow color, and moist appearance,

which on section showed a turbid, whitish-yellow puriform contents ; or the nodules were of a spongy texture, in the fine stroma of which were numerous spaces about the dimensions of a hemp-seed, containing a dull-yellow, thick or cheesy-like substance. In scraping a section of an old or young nodule, this substance was easily removed. Microscopically, the tumors appeared to be composed for the greater part of old or embryo granulation tissue, which had a kind of sarcomatous structure, while the cheesy substance consisted of pus corpuscles, granulation and granular cells, as well as fatty granular detritus ; in addition, the latter contained innumerable various sized bodies, which were opaque, of a faint yellow tint, often somewhat mulberry-shaped in outline, and here and there encrusted with lime salts. This was recognized as a real fungus, but at first no pathological importance was attached to its presence, and the disease was simply named "Jaw-osteosarcoma."

Besides this noteworthy form, which appeared to have its origin in the invasion of the alveoli by the fungus, the tongue of the ox presented another form proper to itself. Imbedded in the parenchyma of the organ, Bollinger found a number of nodular looking bodies, the majority of which were as large as a millet or hemp-seed, and some as big as a cherry or walnut ; many stood prominently from the surface of the mucus membrane. When fresh they were mostly white or grayish-white, diaphanous, moist-looking, very soon becoming turbid or undergoing puriform softening, and vacating their connective tissue capsule. When these nodules were on the upper surface of the tongue, destruction of the mucus membrane, erosion, ulceration, and cicatrization took place : while in the parenchyma of the tongue, a secondary interstitial glossitis became developed, when there was partial atrophy of the muscular fasciculi, and a marked enlargement and wood-like induration of the organ.

The disease, when in the jaws, was not uncommon in old cattle, developing itself in a few weeks, and was nearly always incurable ; the animals would survive for a month, or even a year, until the difficulty of eating, because of the diseased jaw or enlarged tongue, produced emaciation and debility, and the

animal was slaughtered. In the nodules of the tongue, as in the jaw, the microscopic fungus was constantly present. That the tongue disease was not rare was evidenced by the fact that in one year Bollinger had no fewer than six specimens sent to him from various parts of Bavaria; while in five preparations he had in spirit, he found the fungus. He not only discovered this fungus in the centre of the nodules, but also in the sub-maxillary lymphatic glands of the tongue, as well as in the tracheal lymphatic glands. He found these glands greatly enlarged and studded with grey and dull-yellowish spongy nodules, in the interior of which he found immense numbers of the fungus. The fungus was likewise discovered in a series of new formation tumors, which cows are very liable to, in the pharynx and larynx, as well as in the mucous membrane of the stomach. In the two former situations, these tumors appeared as polypi and received the name of "Throat-tumor," "Lymphoma," etc.

In fixing upon this endophyte as the cause of the disease, through its destructive nature, and its tendency to produce new formation growths, Bollinger makes some remarks on the fungus, which had been carefully studied by the Professor of Botany at the Munich Veterinary School, Dr. Harz, who obtained it from fresh specimens. The fungus found in the tumors from cattle form globular drussy tufts, from 0, 11 to 1 millimetre in diameter. The majority of these tufts are aggregated in mulberry-shaped masses of from 0, 5 to 1 millimetre in diameter, and appear to the unaided eye as very minute dull-white granules. Very frequently the tufts are somewhat calcareous, and then it is difficult to make out their composition; it is the same when they have become altered by lying some time in alcohol. By a slight pressure made upon it, the fungus tuft is considerably altered in appearance, and mostly assumes the shape of a spheroidal segment, wherein some of the organisms can be distinctly traced throughout. The latter commence at the pointed end of the mass, with a somewhat cone-shaped base-cell, which may possibly represent the non-apparent mycelium, and which bears a large number of short-stalked hyphens. The end of the hyphen shows the Gonidia, which are, like the hyphen itself, polymorphous, and

of an oval, globular or elongated form. From the expanded end of the Gonidia are developed a number of young shoots or sprigs, and from each Gonidium arises an individual, so that a number of Gonidia together gives rise to a mulberry-shaped colony; and this is the usual form in which the clusters of fungi appear, though sometimes here and there are found stunted or abortive groups.

The fungus, in fact, is allied in many respects to the common green mould which grows on jam, paste, etc., and is, therefore, very far from being one of the lowest of the group to which it belongs. The individual plant, in reality, consists of a conical mass of branched filaments springing from a single cell, and bearing on their short terminal branchlets the spores or Gonidia by which the mould is produced. From the radiating structure of this micro-entophyte, and its being found at first in the ox tribe, it was named "*Actinomyces Bovis*." This, Bollinger asserted, was the first instance in which a fungus belonging to the class of moulds had been found in the interior of animal tissues, such as bones.

Since 1868, several Italian and German Veterinarians record observations of much interest and furnish conclusive evidence of the correctness of Bollinger's descriptions and conclusions. I will now briefly sketch the symptoms of the disease, and mention the different situations and animals in which it has hitherto been observed.

Actinomykosis of the Tongue.—When the disease is present in the tongue, it is supposed to be Schirrus, Glossitis, Cancer, etc. Doubtless all these morbid states may exist without the presence of the *Actinomyces*, but I think I may be pardoned, from the cases reported, if I ascribe the majority of the instances which occur of disease in the tongue to this microphyte. In the description given by Captain Russell, F.R.C.V.S., *Actinomykosis of the tongue* is graphically delineated.

He writes, when treating of induration of the tongue in the ox: "I have observed that the disease commences with small patches of a yellow color, associated with thickening of the mucous membrane, sometimes on the dorsal surface, sometimes on the tip, and at others underneath the tongue, or one or other of its sides. This thickening in the course of a short time

breaks up into a number of small pimple-like excrescences, which soon become confluent. As the disease spreads, a cheesy deposit is thrown off, leaving a very red and angry-looking surface. Subsequently, the organ becomes hard and swollen, and eventually hangs from the mouth perfectly useless. The animal quickly loses the power of prehension and deglutition, and if not destroyed usually succumbs to inanition. I do not find that either local or constitutional treatment is of any avail. Four years ago my attention was called to several cases, and in this season I have seen as many as twenty. The progress of the malady is generally slow, the increase in size of the tongue being gradual; but as it progresses movement of the organ is diminished and mastication is performed with corresponding difficulty. There are rarely any indications of severe inflammation noted, and this fact should differentiate the disease from Glossitis, as should also the absence of the acute pain which marks the latter. Discoloration may be present here and there; indeed, this usually precedes ulceration."

These are the chief symptoms when the tongue is the seat of the disease. The pimple-like excrescences, often only the size of a millet-seed, are frequently larger than a walnut. The inflammation and interstitial induration appear to proceed from the surface toward the centre, and the growth of the nodules takes place rapidly; and this is evidently proven from the circumstance attending their reappearance when they have been removed by operation.

In the majority of cases, there are perceived a more or less considerable number of prominences, on the dorsum most frequently, on one or both sides of the tongue, or over the whole of its surface; these look like nodules or tubercles, sometimes like warty excrescences flattened on the top, and vary in size from a millet seed to a walnut, being either single or in clusters. The tongue is enlarged, indurated, "lumpy," often more or less, extensively ulcerated in one or more places; there is very considerable hyperthrophy of the submucous and interstitial connective tissue; atrophy or degeneration, more or less marked, of the muscular tissue, and the peculiar yellowish-white round nodules disseminated singly, or in masses throughout, each containing a cluster or at least a tuft of the "Actino-

myces." The gums, cheeks, palate, or jaws may also be involved.

An important feature in the micro-pathology of Actinomykosis of the tongue, is the cell infiltration of the connective tissue, and the proliferous multiplication of its nuclear elements and of the muscle nuclei. The new cell forms are as a rule unequally distributed among the muscle fibres, being in some parts widely scattered, in others collected together in dense, rounded, or irregular groups. There is also observable in connection with the latter condition more or less fibrinous exudation, which together with the cell growth have the effect of separating the fibres from each other, and inducing serious textural alterations. New connective tissue, studded with spindle cells, is abundantly present in the structure of the muscle, and by its maturation and contraction leads to atrophy and destruction of its fibres over large areas. By the presence of the inflammatory exudate and embryonic new growth the muscle fibres are squeezed, and may be seen on the borders of the fungus nests flattened out and reduced in their diameter to one-fourth or one-eighth their natural size. Over very considerable areas they are entirely absent, the collapsed sarcolemma only being here or there observable to mark their former presence, while bordering on such parts they seem reduced in size to the dimensions of a blood-corpuscle.

The presence of fungus nests enclosing groups of the actinomyces constitutes the most constant histo-pathological feature of the disorder. These peculiar formations may occur in very large numbers, and be closely packed together, or they may be few and far between. I have seen them in every part of the structure of the tongue, but it is in the submucous membrane tissue that they are most frequently and most abundantly found. The nests consists of large masses of cells heaped around smaller or larger colonies of fungi, which they everywhere enclose. They are rounded in form and vary in size according to the strength of the colony and the amount of inflammatory growth present. The cells of which they are composed vary in character under different circumstances. Sometimes they are distinctly epithelioid and contain a simple nucleus, which stains deeply with hamatoxylin, the cell substance remaining clear

and faintly distinguishable. In form they are polygonal or rounded. Beyond these which make up the chief bulk of the cell mass, there is a narrow zone of irregular concentric layers of fibro-plastic corpuscles. No intercellular substance intervenes, but under certain conditions, presently to be referred to, branching fragments of degenerated connective tissue are present ramifying through the growth. As each cell mass enlarges it condenses the connective substance around it, and in this way becomes enclosed in a capsule, through which exudation corpuscles are scattered in greater or less amount, as well as the granular remains of cell disintegration. In other and more common examples of these fungous territories the cell elements exhibit a great variety of shape, size, arrangement and condition. Some are round, others hexagonal, oval, rhomboid, etc. They are huddled together without any order whatever into a confused heap, through which are interspersed large numbers of free nuclei, seemingly derived from the proliferous multiplication of connective tissue elements. It is in these examples, which would appear to be formed under a more energetic inflammatory action, that necrosed portions of connective tissue appear within the cell masses. The cells of the fungus territory differ from those of the epitheliomata, not only in their smaller and more uniform size, but also in the fact that they do not form the characteristic dense "concentric globes" or "bird's nest bodies." Like as in tubercle, the cell masses of actinomykosis rapidly undergo degeneration. The change is first seen in the centre of the growths, when the outline of the cells disappear, and they become cloudy and granular, after which they shrink and finally break down into an opaque granular mass. The degenerative process extends from the centre toward the circumference, until the whole is resolved into a caseous condition. The nature of the change involved is essentially fatty degeneration. During the process of cutting and manipulating, the caseous and loose cell masses fall out, when holes with irregular edges are left; similar but more irregular spaces result from the displacement of islets of connective tissue, which have perished in consequence of the blood supply having been cut off.

Actinomykosis of the Bones of the Jaw.—Not infrequently we have

the tongue and jaws affected simultaneously or consecutively—generally the latter. The tumor which forms on or in the bone is apparently of a sarcomatous or fibro-sarcomatous character, according as the Actinomykosis is periosteal or myeloid. It often commences in the alveoli of the jaw and thence extends into the mouth and the cancellated tissue of the bone, and is accompanied by abscesses and fistula. In this situation it has been observed in the ox, pig, goat and dog.

Only one instance has been recorded in the dog—that by Professor Vachetta, of the Veterinary School at Pisa, and which was published this year under the heading of “Macro-cellular Osteo-condrosarcoma, with actinomykosis.” About two months before the Professor saw the dog, a swelling appeared, without any assignable cause, on the posterior half of the right branch of the lower jaw, and rapidly increased in volume. In about twenty days the skin became ulcerated, mastication was difficult, and the animal was then brought to the clinic of the school. The ulceration of the skin was now somewhat extensive, and in the centre of this was a small hole, into which a probe could be introduced two or three millimetres. The tumor was hard as a stone at the margin of the dental alveoli, but became softer toward the lower border of the jaw. With the exception of the ulceration, the skin was otherwise healthy in the neighborhood. The tumor was not hot, neither did pressure on it cause pain, but difficulty was evidently experienced in moving the jaw. The mouth was kept half open, and a little saliva flowed from it; the tongue was healthy, and nothing amiss was noticed on the left side or roof of the cavity. The fourth and fifth molars of the right side were pushed upwards by the growth of tumor, and were a little separated from the adjoining teeth. The mucous membrane of the mouth was healthy and the gums were not separated from the teeth. There was no swelling in the intermaxillary space, nor toward the neck. The jaw could be moved passively. The disease was diagnosed as Osteo-sarcoma, probably complicated with myeloplaxy.

In view of the rapid growth of the tumor, and the local and general condition of the animal, as well as the improbability of palliative, or pharmaceutical measures being of any avail, re-

section of the diseased portion of the jaw was made, and though for some time the prospects of recovery were favorable, yet the dog ultimately succumbed.

The major portion of the tumor was hard and fibrous, and had a yellowish-red tint at the inferior part, whitish elsewhere. At the lower curvature the neoplasm became suddenly and regularly lobulated, the connective tissue forming the interlobular spaces being continuous with that composing the envelope of the tumor as a whole. The inferior third of the section showed multitudes of yellow points, irregularly disseminated throughout; there were none in the upper part. The tumor and its fibrous envelope were very slightly vascular. When examined microscopically, the most important feature noticed was the presence of numerous disseminated *Actinomycetes* masses, especially toward the inferior part; they were only casually met with in the upper portion, while deeper in the tumor they were very definite in outline, and enclosed in a kind of nucleus composed of apparently dead tissue. Many of these radiate fungi did not show the slightest trace of calcification, others were completely invaded by lime salts, and the nodules enclosing them had to be treated by nitric acid before their contour could be well defined. The fungus appeared in two rather different forms, or rather aspects, which probably depended upon its stage of growth. Cut in the direction of the sarcomatous tissue, intermediate to the necrobiotic focus, there were observed very numerous small discs composed of fine radiating filaments, one portion of which terminated in a rather dark punctiform dilatation. These were more abundant in the peripheral tissue of the tumor, which appeared to contain the younger specimens, and of which there were only a few varieties. There was a more adult form, very often two discs together, in which the radiating filaments, starting from the central discs, were not so slender as in the other example, were of various lengths, and the punctiform dilatations at the end were also larger and more numerous. These dilatations, which may be considered *Gonidia* in process of maturation, were found in some preparations so developed as to look like true spores, and by their number and minute size they might readily become the active agents of dissemination, far and near, of the micromy-

cetes in the tissues. The other form of *Actinomyces* was composed of a central irregular, or round disc, light-yellow or olive-tinted and granular, from which proceeded rays much larger than in the preceeding forms. In some of the specimens these rays were approximately equal in length, and altogether the *Actinomyces* did not look unlike the flower *Marguerite*. In other instances, the length of the single filaments varied remarkably; while some of these projected only a short distance from the central disc, others extended in a direct and flexous manner right into the surrounding necrobiotic elements. When by pressure the *Actinomyces* could be separated from each other into single filaments, and these were highly magnified; they were found to be flexible rods, each terminating in a lance-like bulging, or in an angular, single, bifurcated, or trifurcated extremity with a rounded apice. When yet more highly magnified, there was seen in the centre of each filament a fine axial line, either entire, broken, or in points or dots.

Vachetta terminates his observations by remarking that though the canine species has hitherto shown itself refractory to experimental inoculation, yet this instance proves that it may suffer from the accidental disease; that the fungus may present slight variation in form, not only in the different species of creatures in which it has been found (man, ox, pig, horse and dog), but also in individuals and in the different neoplasmata, as is shown by the representations given of it under these circumstances. He was doubtful as to the channel by which it found its way into the tissues—whether by an excoriation, ulceration, or fissure in the gums, or rather by an ulcer of fistulous opening at the lower margin of the jaw.

Johnes describes thirteen cases of *Actinomykosis* of the jaws. Some had a central origin—"Myeloid *Actinomykosis*," others commenced in the periosteal tissue—"Periosteal *Actinomykosis*." He also mentions a case of *Fibro-Sarcoma* of the lower jaw of an ox in which the tumor was the size of two fists, round, fungus and fibrous, and which arose from the alveolar periosteum of the middle incisors; it lay beneath the mucous membrane, and produced great thickening of the lip; another instance of fibrous tumor of the gum, apparently of new formation, the size of a hen's egg, which grew from the periosteum

at the interior aspect of the junction of the two portions of the lower jaw, at the lower half of the alveolar border. The stroma of the tumor was three millimetres thick, and the mass, like that of the last tumor, contained "nests" of Actinomycetes. He likewise alludes to an apparently fibro-sarcomatous tumor on the margin of the gum of the lower jaw of a pig: a tumor involving the tongue, about the size of a pigeon's egg, and springing directly from the periosteum on the upper surface of both branches of the jaw. In the more dense fibrous tissue, less in the spongy stroma, were many conglomerations of nodules the size of a millet-seed, containing the Actinomycetes in clusters, many of which were calcified.

Actinomykosis, as it affects osseous tissue, is, I believe, rarely seen in any other bones than those of the face. The great proneness of the maxilla is most likely referable to their intimate relations with the dental apparatus, and more immediately to the laceration and exposure of the alveolar membrane during the shedding of the temporary teeth. The turbinated bones are especially liable by reason of the frequent infection of the Schneiderian membrane from which the disorder extends. When several bones of the face are involved at the same time one or more of the neighboring cavities frequently become encroached upon, and the head presents a large and misshapen appearance. This deformity is due to the mechanical expansion of the osseous texture arising out of an exuberant growth of granulation tissue within it, and the consequent softening, thinning and solution of the ossific lamina. The fungating growth may extend into the sinuses of the head, into the mouth or nasal chambers, either by a process of simple atrophic destruction and perforation of bone, or by an intrinsic carious process, or it may likewise reach the various cavities by inter-osseous growth. This is especially the case in young animals in whom the sutures are still loose and the bones easily displaced. I have seen the palatine sutures of the superior maxilla, for example, opened out to the extent of an inch by the upward growth of granulation tissue from the palatine membrane, in which case the vomer was completely buried in the new formation and the septum nasi displaced laterally. Loosening and dislodgement of the teeth are common results

of actinomykosis of the maxilla. The latter is usually followed by a filling up of the alveolar cavities with soft, vascular, new growths, or portions of the jaw may be exfoliated with the teeth still in the alveoli. The skin and subtegumentary tissues over the region corresponding with the diseased bone are often much indurated, presenting one or more fungating or fistulous wounds, the latter discharging a foetid sanguinolent pus. When examined after maceration the affected bones present a variety of appearance. In some parts they are but slightly rarefied, in others greatly swollen and distinctly porous, while in more advanced cases they are resolved into a coarse network of delicate plates and fibres, in the midst of which portions of bone are loosely suspended. In this condition the ossific structure will break down under the slightest pressure. In parts removed from the destructive foci of inflammation the constructive effects of exalted nutritive action are seen in the form of tracts of hyperostosis, or thickened and condensed areas of bone.

In certain cases new osseous tissue in the form of one or other of the various osteophytes is developed in the vicinity of the diseased area.

Gamgee (Dairy Stock) undoubtedly alludes to this affection, though he was unaware of its pathology. He writes: "In young cattle there is a somewhat frequent disease termed by some Veterinary Surgeons 'Osteo-Sarcoma,' 'Spina-Ventosa,' and other inappropriate names. The only term I can give it is fibro plastic degeneration of bone. There is no recognized cause of the disease. It occurs most readily from two to five or six years of age, and affects steers in preference to bulls; the lower jaw is most frequently seized in the vicinity of the second or third molar teeth. Sometimes the upper jaw is implicated. . . . At a spot on the side of the face corresponding to the roots of the third or fourth grinder, above or below, a small, hot, circumscribed swelling occurs. The animal experiences no inconvenience from it, except when the part is struck or pressed upon. The tumor, however, grows and pain increases. In some cases the growth is rapid, and in a few months the disease has invaded the larger part of one-half of the upper or lower jaw, and gives rise to severe symptoms, which arise

chiefly from disturbed mastication, pain, and often from various cruel methods of treating the disease. The teeth become loose in their sockets, may be affected by caries, and drop out. Anacker says that sometimes a fistula opens into the mouth. . . . It is evidently a morbid condition of bony structure. On dissecting the skin off the tumor, we find it covered with tough fibrous tissue arranged in layers. The fibrous element diminishes toward the deeper parts of the growth, where at various parts *yellow accumulations of a friable cellular or granular matter are enclosed in solid cavities*, surrounded by bony plates or a tough gristly tissue. M. Collignon, veterinary inspector of the slaughter house of Montmartre, has observed the disease three times in 300 oxen, and those he found affected came from the marshy plains of La Rochelle. In the plains of Ferrara, and in the Maremme of Tuscany, the disease is very frequent. Low bred animals are most subject to it, and its origin is usually attributed to a blow."

Actinomykosis of the Fauces and Larynx.—The disease generally appears in this region in the form of submucous new formations or polypi, which have been classed with the Lymphomata or Lympho-sarcomata. They are round fungus or spongy tumors, covered by apparently normal mucous membrane. There are sometimes several in this situation. They present the same features, histologically, as the nodules in the tongue. Hitherto they have only been found in the ox. Johnes describes one of these polypi obtained from the fauces of an ox, as about the size of a fist, round, fungus and soft, covered by normal mucous membrane, rising from the right side of the cavity, a short distance behind the tonsil. On section, it showed five isolated, round and generally fine spongy nodules, the size of a walnut. All of these contained conglomerated masses of the fungus.

The symptoms are difficult in deglutition, and even in respiration, with cough when the tumor is near the laryngeal opening.

Similar tumors are found in the region of the epiglottis and larynx.

Actinomykosis of the Œsophagus, Lungs, etc.—A most interesting instance of the disease in the œsophagus is described by Siedamgrotzky, who obtained the specimen fresh and carefully

examined it. The mucous membrane of the tube was covered with hundreds of small, flattened, sub-epithelial nodules, from one to four millimetres in diameter, mostly collected in groups, in each of which, in a bright light, a small yellow centre could be distinguished by the naked eye. In some places the small tumors had become confluent to form irregular, compact masses, about twenty millimetres long, of a pale red tint, and in which the yellowish red centres or kernels were visible. Some of the tumors stood out from the mucous membrane like pin's heads. In the middle of the cesophagus was a similarly shaped polypus, eight millimetres in diameter, four millimetres high and four millimetres in diameter at its base on the mucous membrane. The tissue of these masses was yellowish red, soft and filled with numbers of nodules containing the *Actinomyces*.

Two instances of Actinomykosis of the stomach and intestinal canal and two of the udder are described by John. Pfluz, of Giesen, describes a case in which the lungs were the seat of the disease, strongly resembling in symptoms Pleuropneumonia. On microscopic examination the lung substance was found to contain an immense number of tubercules having *Actinomyces* tufts in the centre.

Pathology.—There is no doubt as to the eteology of Actinomykosis. The *Actinomyces* is constantly found in new formations of a special kind and through its irritating and disintegrating influence it not only produces these formations, but sets up destructive processes in the tissue in which it may locate itself; and sooner or later, unless it loses its power or is removed from them, causes their death. An *Actinomyces* tumor must, therefore, be looked upon as an "infection tumor" and Actinomykosis as an infectious disease. Mr. Kaufmann, of Lyons Veterinary School, has published some investigations he has made with regard to the infectiveness of the fungus *Aspergillus glaucus*. He proves that the spores of certain moles are as pernicious to the health of animals and mankind as bacterides.

These tumors offer certain distinctive characters, and all tumors containing these characters contain the fungus. Externally, these growths present various appearances, but they are generally round, lobular or fungiform in shape, smooth on the

surface and soft in consistency, like the polypi-sarcomata, or somewhat hard like the fibro-sarcomata. In color they also vary, the latter being of a greyish-white, or light yellow tint; the former are darker, less vascular and often stained by blood extravasations. Studding the surface are seen a number of small yellow nodules whose presence is a diagnostic feature. On section the typical character of the Actinomykoma is best displayed. Imbedded in the fibrous stroma are noticed nodules, small and isolated, or in confluent rounded masses the size of a walnut, grey or yellow in color, of a cheesy softness, having minute yellow particles or centres, the clusters of Actinomyces.

The fungus invades the tissues probably by entering, in the form of spores, through a round, abrasion, fissure, or even by means of the delicate mucous follicles of the membrane lining the digestive or respiratory canal.

The species of animal invaded by the *Actinomyces* appears to have much influence on the pathological results. In man, in whom sixteen cases have been recorded, the tendency is to suppurative processes and metastatic abscesses; while in animals it is to new formation tumors and induration or degeneration of tissues.

That the disease is transmissible from one animal to another has been demonstrated experimentally by Johne and Ponfick. There is no record of any instances which might tend to show that the disease may be accidentally transmitted; though the fact that it is inoculable leads us to suppose so. Now that the attention is likely to be directed to the disease by veterinarians and surgeons we may be able to note its accidental transmission from diseased to healthy animals and to mankind.

Prognosis.—The prognosis depends on the locality and extent to which it has developed itself. When it is accessible and has not caused serious alteration, and when it can be removed or palliated within a certain time, then it is favorable. Sometimes spontaneous recovery takes place.

Treatment.—The treatment of Actinomykosis belongs exclusively to the domain of surgery, and its object must be the extirpation or destruction of the microphyte. This is only possible when it is accessible to the hand, surgical instruments,

or destructive agents—caustics, etc. Tumors of the jaws or face can be removed, but it must be for the Veterinary Surgeon to determine as to whether the operation will be profitable, from a pecuniary point of view. Resection of the jaws, a desirable operation in man, is not to be recommended in the case of animals for obvious utilitarian reasons. In all cases operated on care should be taken to dress the wound with such agents as will destroy the spores of the fungus which may chance to remain. When near the surface in the tongue the disease can be destroyed by Carbolic Acid (1 to 25 of water) or Tinct. Fer. Perchlor, Liq. Fer. Perchlor, fort, diluted with only two parts of water.

The sanitary importance of this disease is evident, and it is well to bear in mind that spores of this fungus, alike destructive to man and beast, may invade the body by a trifling scratch or wound, and there set up such changes as to ultimately cause death. Many such cases may have entered our hospitals and come under the observations of the surgeons, without their true nature being suspected; for the disease widely prevails among our cattle, and, therefore, those who come in contact with such creatures must be exposed to accidental transplantation of the *Actinomyces*.

ART. XIX.—SOME DISEASES OF THE EYE IN LOWER ANIMALS.

BY WILLIAM OLIVER MOORE, M.D.,

*Prof. Comparative Ophthalmology, Columbia Veterinary College, N. Y.,
Associate Prof. of Ophthalmology and Otology, New York
Post Graduate Medical School, etc.*

IN the January number of this JOURNAL (Vol. IV., No. I) we spoke of the inflammations of the conjunctiva; in this article we propose to mention some of the consequences.

Granular Lids—Trachoma.—This is a condition of the lining membranes of the eyelids, caused by a chronic inflammation of the conjunctiva, usually preceded by either catarrhæ or purulent conjunctivitis. The condition is not easily seen without first having examined the inner surface of the lids.

On everting the upper lid, the naturally smooth lining will be found to be rough and granular, often the granules being quite large and distinct, in some cases the lid surface presents the appearance of frog spawn. The upper lid is the one most commonly affected, though it may occur in both. This roughness of the lid causes a dullness and ulceration of the cornea, in many cases the cornea becomes very vascular and this condition is called pannus. Many animals from the western prairies have this disease, caused by the sand being blown into their eyes, thus producing an inflammation of the conjunctiva. In the human subject the disease is very common and gives rise to much distress and diminution of vision. The treatment consists in touching the panular surface. This is best done by everting the upper lid and applying to the inflamed surface sulphate of copper in crystal, gently rubbing it over the lid. If the lower lid is affected the same may be done or, instead of the copper a "mitigated stick," composed of nitrate of silver, one part, and nitrate of potash, two parts, will be found useful. These applications should be made twice a week at least, and will have to be kept up for a long time. Besides these measures the lids should be bathed with cold water and the secretions carefully wiped away. If there should be great spasm of the eyelids causing pressure on the globe an operation can be done on the outer canthus of the eye, in other words a division of the orbicular muscle which surrounds the lids can be made. The operation is called canthoplasty, and is of great service in some cases. Solutions of nitrate of silver, five and ten grains to the ounce may be used. Sometimes a solution of tannin and glycerine serves a good purpose (Ac. Tannic gr. x—Glycerine ʒi). In fact we have to change from one to the other, as the disease is so protracted. We are now using in the human subject a new remedy, namely, an infusion made from a Brazilian bean called the licorice bean. This infusion is dropped into the eye and produces a new inflammation of a membranous character, which, when subsiding, causes a removal of the granulations and a decrease in the vascularity of the cornea. It is just on its trial in this country, but so far as I have used it I have had excellent results and I look upon it as a great gain to our knowl-

edge. This disease is not so common in animals as in man.

Keratitis—Ulcers of the Cornea, etc.—Keratitis is an inflammation of the cornea, and may be of the superficial or deep parts of its structure. Whenever we have an abrasion of the corneal surface we speak of it as an ulcer. These ulcers may occur from injuries, or may be the direct result of any severe inflammation of the eyelids. During the progress of purulent conjunctivitis, or "blinds," in cattle, we have the cornea very seriously involved, ulcers forming deep in the tissue and oftentimes perforating its substance, causing thereby a loss of the aqueous humor and a prolapse of the iris into the wound. This adhesion of the iris to the cornea brought about in this way is called anterior synechia, and the opacity formed on the healing of the ulcer a leucoma adhærens. All inflammations of the deep structures of the cornea, leave behind them opacities, which show more or less distinct according to the extent of the tissue change. Sometimes the whole corneal surface is milky, or there may be only one prominent white spot, the seat of some former ulcer. A great deal of confusion seems to exist in the minds of many in regard to these opacities, the result of keratitis. By many they are called cataract. No greater mistake could be made, and if a careful examination is made none need make such an error. These opacities are always on the corneal surface and may be at any point, whereas cataract, is behind the cornea, is an opacity in the crystalline lens, and is *always* the size of the pupillary opening.

When the keratitis is associated with the formation of pus in the anterior chamber of the eye it is termed keratitis hypopion; it is a violent inflammation, and needs special care. Keratitis occurs in broken down and cachectic animals, in the human subject it often occurs in children as the result of inherited syphilis. This latter form is obstinate and causes much anxiety to the physician. Keratitis and ulcers of whatever form, are treated locally, by the instillation of a solution of sulphate of atropia (gr. ii, ʒi aq.) three times a day. This not only relieves pain, but also dilates the pupil, thus getting it out of danger. Hot water applied to the closed eyelids is also a valuable agent in these affections. The water may be applied by means of cloths or sponges. When there is any con-

stitutional cause tonics must be given. When pus is very marked in the anterior chamber it may be evacuated by means of an operation called paracentesis cornea. That is merely tapping the chamber by a narrow knife at the corneal margin, the same operation that is performed for the removal of filaria from the eye. The foregoing methods of treatment will, in most cases, cure inflammation of the cornea. For the relief of the opacities, obstructing vision, after these inflammations, surgical measures have to be resorted to. When the opacity covers the pupil, or where the iris is entangled in the cicatrix an artificial pupil can be made by performing an iridectomy; that is, removing a piece of the iris at a point opposite clear cornea. Through this new opening the animal will see. The white spot can be made less prominent by tatooing with India ink in the same manner that the skin is stained. Of course such eyes are never in as perfect condition as before the disease began. Deep scars of the cornea cannot be removed by medication, although pounded glass, formerly, was much used for this purpose. The superficial scars are sometimes made less prominent, it is thought by some, by the use of calomel dusted into the eye frequently, or by the use of the yellow oxide of mercury mixed with vaseline, the proportion of five grains to the half ounce, this is put into the eye. For myself I think medicines do very little, and that time causes their disappearance more than anything else. Early treatment of corneal inflammations will largely decrease these scars so disastrous to good vision.

Obstruction of the Tear Ducts.—The condition spoken of as “watery eye” is one often of great annoyance to the animal, and also impairs the usefulness of the eye. It is due to an inflammation of the mucous membrane lining the lachrymal canal, which membrane is continuous with that of the nose and throat. Catarrhal inflammations of the nose and pharynx cause the majority of the cases of lachrymal obstruction by direct continuity of inflammation. The obstruction may be due to either swelling of the lining membrane or to a narrowing of the canal by bony pressure.

When produced by either, the symptoms are the same. A constant flowing of tears over the eyelid on to the nose

and face, the conjunctiva is always red and inflamed by the constant presence of the acid tears. By pressing in at the inner angle of the eyelid, right over the head of the lachrymal sac, tears and, in some instances, muco-pus can be squeezed out. Sometimes an abscess forms in the lachrymal sac, giving rise to much pain and considerable swelling, which may either open through the natural passages or open on the face, forming a fistula.

We frequently see cases of ulcer of the cornea that are directly caused by obstruction of the tear ducts, the irritating tears acting as a poison to the eye. It thus behooves us to examine carefully the cause, in order that we may scientifically treat all our patients.

Treatment is mechanical and consists in removing the obstruction. After having satisfied ourselves of the disease it will be necessary to open, with a narrow knife with a probe point, the little canal that is near the edge of the lower eyelid. The probe point is introduced into the opening of the canal (which can be easily seen) and the knife passed to the lachrymal sac, thus cutting off the top of the canal, in other words converting the canal into an open trough. This opening made, a fine probe, like a filiform urethral bougie, may be introduced through the entire length of the nasal duct. Should the stricture be so dense that a small bougie will not pass, a knife may be passed down and the stricture incised, after which the probe may be passed. This procedure may be considered by some impracticable, but it is not, for as long ago as 1850 Percival did this operation with success. The use of eye lotions do very little good, as the obstruction still remains, and nothing but a surgical procedure will rectify it. After the operation is performed the parts must be kept clean and the canal open for the first few days by the use of a probe or bougie. The nasal duct may also be syringed out by astringent solutions, thus medicating the entire lining of the tube. Solutions of powdered alum, one drachm to the pint of water, or weak solutions of nitrate of silver, two to five grains to the ounce, may be used with great benefit; the nozzle of the syringe being introduced into the slit up canal on the edge of the lid.

(To be continued.)

ART. XX.—ABORTION.

BY A. S. HEATH, M.D.

*Professor of Bovine,, Ovine and Suvine Pathology, Columbia
Veterinary College.*

MISCARRIAGE, slinking, abortion, or slipping the calf, occurs to cows in apparent high health and condition.

It is usual to divide the period of gestation of forty-two weeks or two hundred and eighty days, into two parts; the first part, six months; second, three months. To all cases occurring during the first part the term abortion is applied, and after that premature labor.

Causes.—These may be divided into external, internal, predisposing and exciting.

The external causes are those due to atmospherical influences, bad sanitary conditions and to the various accidents in field, pasture, road or stable.

The internal causes are dependent upon disease, malformation, or malposition of the young in utero.

The predisposing causes may be previous abortion, hereditary predisposition, uterine disease, either by extension or sympathy, disease conveyed from mother to foetus, pleuropneumonia, great size of foetus, or more than one; extreme plethora or obesity of the mother, often become predisposing causes.

Exciting causes, are sudden and extreme changes of temperature, bad, or indigestible food, smut rye grass, diseased or mouldy corn, food too stimulating, excessive drinking of cold water, foul water, eating horse-tail grasses, sedges, hellebore, savin, rue, ergot of rye, the external or internal use of cantharides, turpentine, or drastic purgatives.

Treatment.—Change of pasture and attention to sanitary regulations, enemas of warm water, laxative, e. g.

R Epsom salts,	12 oz.
Sulphur,	3 “
Ginger and Gentian, a ã 1 “	

Give in molasses and water, one-quarter to sheep.

When the uterus lacks power to expel the foetus, and when abortion cannot be prevented, give

R Aromat. spts. ammonia, 2 to 3 oz.
Tr. cardamons, 1 "

Give in a quart of ale one-quarter to sheep, or,

R Plv. ergot, 4 drs.
Ginger, plv., 1 oz.

Give in a pint of ale every hour.

The placenta and membranes, if long retained and offensive, should be removed by the hand.

R Solut. carbolic acid, glycerine, ā ā $\frac{1}{2}$ oz.
Water, $\frac{1}{2}$ gal.
Inject into vagina,

Premature Labor.—The longer the foetus remains in place the better prepared is nature for delivery.

Malposition or death of foetus may cause the premature labor. The animal suffers with unusual pains. If a foot protrudes and the hair comes off readily, the calf is dead. Debility of the female indicates danger and demands artificial delivery and stimulants.

To Prevent Abortion.—Feed a pint of hemp seed daily for seven months.

Feed a pint of flax-seed to cows ready to "come in," and for three or four days after.

Suckle the calves twice a day if not fed. It is advisable to let the calves suck the cows for at least a week, as it is a return to nature.

ART. XXI.—PHYSICAL DIAGNOSIS.*

BY E. BENJAMIN RAMSDELL, M.D.,

Lecturer on Diseases of the Respiratory Apparatus, Columbia Veterinary College and School of Comparative Medicine.

At our last lecture we discussed under the heading, "Palpation," the phenomena of friction fremitus and pulse, both in its relation to health and to diseased conditions.

* Abstract of a lecture recently delivered at Columbia Veterinary College.

To-day we will continue the study of the second method employed in Physical Diagnosis, namely: Palpation, by considering the subject of temperature. The sense of touch was at one time the only method, and among some older practitioners is now, employed for the detection of an increase of the bodily temperature; but science is not satisfied with such a crude mode of examination and it is better to use the more sensitive thermometer. The animal body is so constituted as to be able to withstand exposure to considerable degrees of heat and cold, and yet be in itself never much above or below the mean standard of health.

The animals that pant beneath the scorching rays of a tropical sun have the same mean temperature as the faithful creatures that accompany hazardous man in his search for the north pole.

This mean temperature is maintained in part by the action of the skin and its coverings, and partly through the agency of the nervous system in the regulation of combustion, &c., &c.

In man the temperature of health is $98\frac{1}{2}^{\circ}$ Far. The mean temperature of the horse in health is about 99° Farenheit.

A slight elevation of temperature is not of great importance in itself, but in the incubative stage of glanders, pleuro-pneumonia and other contagious or infectious diseases its recognition is of the highest importance. Here, in the above mentioned cases, the early appreciation of the presence of the disease plays an important part in preventing the development and propagation of such maladies, and depends much upon the use of a delicate thermometer.

When an outbreak of such diseases as the above occurs, it is very possible that out of a large herd of cattle or stud of horses but one or two may present any appreciable sign of the disease, all the rest remaining apparently healthy; but although they may not give any evidence of the disease, it does not follow that they are not tainted with the malady in its incubative stage. We do not pretend that the simple rise of temperature is diagnostic of any particular disease, but, under the circumstances, it would be sufficient to indicate the necessity of quarantining such animals immediately.

The temperature should be taken in the rectum in every case

for the sake of accuracy in comparison and for the safety of the instrument. The thermometer should be left in situ about four minutes.

The temperature in the rectum is generally conceded to be about one degree above that of the mouth, and for this fact there must be some correction made when we compare these results with temperatures taken in the mouth. * * *

All inflammatory diseases, such as pneumonia, pleurisy, synovitis, laminitis, etc., are accompanied by a rise in temperature, depending in great measure for its height upon the severity of the attack and the extent of surface involved.

* * * * *

Another very important result of palpation is the detection of accumulations of fluid by means of that peculiar sensation called fluctuation.

In the study of abdominal disease we quite frequently see large accumulations of serum in the peritoneal sac. This is called hydroperitoneum or ascites, and may be the concomitant of many diseases of both near and distant viscera. What is this ascites? How is it produced? Passive congestion of the local vessels is the main cause which, whether due to renal-cardiac, hepatic or peritoneal diseases, is always mechanical in its action.

It is produced in renal disease by an interference with the circulation in the minute vessels, arterioles capillaries and smaller veins through the medium of the vasa motor nerves, whose centers have been irritated by the retained materies morbi; the product of tissue metamorphosis; urea.

In cardiac disease it occurs as the result of failure on the part of the right ventricle to carry the blood onward: and this failure allows the veins, notably those of the abdominal viscera, to become distended with the sluggish current.

In hepatic disease it is due to pressure upon the vessels which diminishes their calibre and so dams back the blood. This is a very prominent cause of ascites. By this passive congestion, which I repeat, is purely mechanical, the capillaries become over distended and the serum of the blood extends. This effused serum is of less specific gravity than the serum of the blood; but if the pressure within the

capillaries be increased, the exudation becomes of a higher specific gravity and more and more like the liquor sanguinis. In some cases the cause is disease of the peritoneum. A chronic peritonitis due to malignant growths may induce a deposit of serous fluid in this peritoneal cavity.

In every case of ascites the intestines, more or less distended with gas, float high up in the abdomen and the lower zone is occupied only by serum. Placing the open palm of the hand on one side of the animal's abdomen, and then striking a few short, quick blows on the other side we will feel as though the blows were struck upon our palm. These taps are the blows of the wave which has been carried by the fluid from one side over to the hand on the other side.

This is a positive indication of the presence of fluid, and once felt will always be recognized whenever it exists.

* * * * *

In cases of localized inflammation, when you suspect there is a collection of pus, it is by this principle and this manœuvre that its presence can be detected.

Do not dig your fingers down into the tissues first on one side of the swelling and then on the other, as I have seen many do; but hold one hand smoothly and firmly on one side of the tumefaction while you tap the surface gently on the other side with the fingers of the other hand. This is the only proper way to detect the presence of fluid collections by palpation.

After having examined our patient by inspection and palpation, having noted the number and quality of the respirations, the number and characteristics of the pulse, the temperature, &c., &c., we next bring into the field the third method of Physical Diagnosis, percussion.

This, one of the most important methods employed in Diagnosis, is the process by which we elicit sound by striking blows on the chest wall. We have two varieties of percussion: first, the immediate; and second, the mediate percussion. In the first variety the blow is made with the fingers, knuckles, or hammer directly upon the chest wall without any substance being interposed; therefore it is called the *immediate* variety. In the second, or *mediate* percussion we *interpose* between the chest wall and the fingers, knuckles, or hammer some interven-

ing substance like the finger, or a plate of ivory, bone, hard rubber, maleable glass, etc., etc. This intermediate substance is called the pleximeter, while the object with which the sound is produced is called the percussion hammer.

In order to understand the results of percussion, or in other words be able to appreciate the percussion note, you must first somewhat clearly comprehend the elements of sound.

In general we may say that sounds differ in four ways. These peculiarities of sound are intensity, duration, quality and pitch. All these four characteristics are important in studying a percussion note; but the principle one is pitch.

Intensity means loudness, and this may be increased or diminished by increasing or diminishing the force of the percussion blow. Nevertheless in pulmonary percussion you will find that the intensity is also modified by the amount of air contained in the lung tissue, by the thickness of the soft parts covering the thoracic walls, and by the thickness of the coating of hair.

Duration of sound has reference to the length of time the sound takes to produce its effect upon our auditory apparatus.

One sound seems short and quick, another appears to take a long time in coming and fades gradually away. This of course is an extreme example. We find, as a matter of fact, that other things being equal the pitch regulates the duration the higher the pitch the shorter the duration, and the lower, the pitch the correspondingly longer is the duration.

We define quality as that peculiarity of sound by which we appreciate the difference between a note on one musical instrument and the same note produced by a different instrument.

In sounds produced by percussion you can readily appreciate the difference between this sound produced by a blow on a wooden table, which we say has a wooden quality; this sound produced by a blow on a distended tympanic abdomen, which sound we call tympanic or drum-like in quality; and a third sound produced by percussion over normal lung tissue with properly distended air vesicles, which sound, we consider has a vesicular quality.

Pitch, the most important peculiarity of sound in percussion, is the position of the note on the musical scale; and we design-

nate a note on the scale by saying that its pitch is high or low.

Some men's voices are pitched very low; women's voices are usually pitched much higher. A soprano voice has a range among the high pitched notes while a basso voice uses the notes which are low pitched.

By this imperfect description you will, I hope, obtain a clear idea of the difference between sounds as regards their pitch.

* * * * *

In studying percussion we take for our standard the sound obtained by percussing over healthy lung tissue, when all the conditions are favorable, such as a thin layer of hair, only a moderate thickness of muscular coating, etc., etc.

The percussion note thus obtained is called the normal pulmonary vesicular resonance, and cannot be described in a word-picture; but can only be studied by listening to the sound when produced under proper conditions and carefully considering its intensity, its duration, its quality and its pitch. After you have imprinted this sound thoroughly in your memory, you may with profit listen to abnormal percussion sounds, comparing them with the normal resonance.

We speak of one percussion sound as being more or less intense than the normal resonance. We call the sound longer or shorter than the normal as regards its duration. We speak of a hard, a soft, a metallic, or a wooden sound, as regards its quality, and as regards pitch we have higher or lower sounds than the normal pulmonary vesicular resonance. Of the various sounds obtained by percussion over the chest in health and disease seven have received special names.

The accompanying table gives these different sounds with their relative musical characteristics and the different conditions under which they are produced.

PERCUSSION SOUND.	Pitch.	Duration.	Quality.	Intensity.	CONDITIONS PRODUCING THE SOUND.
Tympanitic resonance,	1	7	Drum-like	5	Pneumo-thorax.
Vesiculo-tympanitic resonance,	2	6	"	4	Emphysema.
Exaggerated pulmonary vesicular resonance,	3	5	Vesicular	3	Vicarious emphysema.
Normal pulmonary vesicular resonance,	4	4	"	2	Normal lung tissue.
Dullness,	5	3	Wooden	1	Consolidation of lung tissue.
Flatness,	6	2	Muscular	3	Absence of lung tissue. Tumor or fluid.
Amphoric resonance,	7	1	Metallic	5	Cavities in lung tissue.

Although you may notice many defects, yet I think this table may be of much practical value to you in the study of respiratory diseases.

The tympanitic resonance is a full, round, drum-like sound and can be obtained by percussing over an abdomen whose intestines are filled with gas. That is the typical sound. Its acoustic properties are, as compared with the normal pulmonary vesicular resonance, its pitch is much lower, its intensity is much increased, its duration is longer, and its quality is drum-like. All these facts and characteristics you will notice are shown in the table.

In thoracic percussion in order to obtain this sound the air must not be in small compartments like the air vesicles of a healthy lung, but must be present in large collections; therefore the only condition productive of this percussion sound would be pneumo-thorax. Pneumo-thorax is a diseased condition in which the pleura no longer has its two surfaces, visceral and parietal, in contact; but the whole sac is distended with air and the lung is collapsed. This disease will be discussed more fully when we come to consider the diseases proper of the lungs.

The vesiculo-tympanitic resonance is so called because it partakes of the properties, both of the tympanitic and of the normal vesicular resonance.

Its pitch is a little lower and its intensity is a little greater than those of the normal resonance, while its duration is shorter than, and its quality similar to, the tympanitic resonance. It is the sound obtained by percussion over a lung whose air vesicles are abnormally distended with air, and there is an increase in the volume of the lung. This condition, where one air space occupies the position formerly filled by several smaller air vesicles, is the result of emphysema; and the vesiculo-tympanitic resonance is the characteristic sound of this disease.

The exaggerated pulmonary vesicular resonance is a sound which differs from the normal solely in a slight increase in its intensity and duration, and a little lowering of the pitch: the quality still remains vesicular. This sound is heard when we percuss over lung tissue which is doing double duty. In cases

of pneumonia or pluriſy with effuſion where one lung is much obſtructed and interferred with in its duty, we have the healthy lung doing ſo much increased work : aerating ſo much more than its uſual compliment of blood, both by increasing the rapidity and number of its reſpiratory efforts, but alſo by increasing the extent of its aerating ſurface ; that we obtain this exaggerated veſicular reſonance.

The normal pulmonary veſicular reſonance is obtained over healthy lung tiſſue which is doing its proper ſhare of duty. We take this ſound for our ſtandard and the firſt thing we muſt all learn is this normal ſound which is the ſame whether obtained by percuffion on the thorax of a man, a horſe, a dog, or a cat.

Dullneſs is that peculiarity of the percuffion note in which, as compared with the normal ſound, the pitch is higher, the intensity is leſs, the duration is ſhortened and the quality is hardened.

Dullneſs may be ſlight, conſiderable, or complete, according as more or leſs air enters that portion of the lung tiſſue under examination.

It always indicates a decrease in the amount of air in the part and is an important physical ſign in the detection of Pneumonia, Tuberculosis, Œdema of the lungs, etc ; where the air veſicles are filled with an exudation to the more or leſs complete excluſion of air.

Flatneſs indicates a total abſence of air. ſo that there is no pulmonary reſonance. It is the reſonance we obtain when we percuff over the liver or over that thick maſs of muſcles on the foreſhoulder. The muſical peculiarities of this ſound are, that the quality is hard, fleſhy or muſcular, as we have called it in our table ; its pitch is high, its duration is ſhort, and its intensity is great.

This ſound is obtained over fluid either in the pleural, pericardial or peritoneal ſac, or over tumors either ſolid or fluid which may invade the thoracic or abdominal cavity, and alſo in ſome caſes of extenſive inflammatory thickening and induration of the pleuræ.

ART. XXII.—SUPRA-PUBIC CYSTOTOMY.

BY J. W. STICKLER, M. S., M. D.,

*Visiting Physician and Curator at the Orange Memorial Hospital, and
Lecturer on Comparative Surgery and Skin Diseases at the
Columbia Veterinary College.*

THERE are diseases and traumatic lesions which may so affect the urethra, that the passage of urine is made impossible either temporarily or permanently. When the former condition obtains, the question arises, how can the bladder be evacuated for a sufficiently long time to make it possible to restore the function of the urethra by local surgical interference? It occurred to me that an artificial outlet for the urine might be established, by making an opening into the bladder through the abdominal walls. To secure this result I performed the following operation upon three rabbits. Having etherized them, they were in turn placed upon their backs and after cutting off enough hair from the abdomen to expose the skin immediately in advance of the pubic bones, I made an incision about one inch and a half long in the median line of the abdomen, cutting through the various muscles and fasciæ so as to bring the base of the bladder into view. On separating the lips of the wound the intestines at once filled the opening, but on gently pushing them aside, the bladder was comparatively easily secured, and after being well drawn forward with a pair of thumb forceps, was incised to the extent of about one-third of an inch, the line of incision extending from the point at which the forceps were applied, toward the neck of the viscus. To maintain the cut surface of the bladder in opposition with abdominal aperture, several silk sutures were used, care being taken to leave no openings between the sutures to admit of leakage into the peritoneal cavity. To assure myself that the opening into the bladder was complete and unobstructed in each case I passed a large sized probe into it. There were no dressings used, the animals being allowed to run freely in a large box prepared for them. After the operations there was a constant flow of urine, but union was not materially retarded, for on the fifth day

I removed the sutures and found the bladder firmly adherent to the abdominal wound, and the artificial opening unobstructed. In one case there was an excessive growth of granulations about the lips of the wound, but these were destroyed, and a healthy process substituted by the application of nitrate of silver. About one month from date of operation the case just referred to began to suffer from prolapse of the bladder, due to a giving away of the stitches in the abdominal wound adjacent to the opening, the natural support of the organ being in this way very greatly weakened. The irritation to which the bladder was subjected by coming into contact with the floor of the box, together with the constant flow of acid urine over its already inflamed mucous membrane finally caused the death of the animal. In the other two cases the openings remained perfectly patent about one month and then became smaller and smaller, entirely closing at the expiration of the second month. There was not the slightest evidence of peritonitis in any of these cases for there was neither marked elevation of temperature, tenderness on palpation, or tympanitic distention of the abdomen. This may be accounted for by the fact the lower animals are not so liable to peritoneal inflammation, after surgical injury or accidental traumatism, as man, but the fact stands, that the base of the bladder can be opened and an artificial urinary outlet secured with very little risk to the patient. In man the anterior surface of the bladder is without peritoneal covering, and in the horse that part of the viscus which rests upon the floor of the pelvis has no serous coat, hence when operated upon, would be less liable to be followed by peritonitis. Infiltration of urine into the cellular tissue of the abdomen, or into the peritoneal cavity, is rendered unlikely if proper care be taken in adjusting the sutures. In case the opening remains patent longer than is requisite, it may be closed by an operation such as adopted for the cure of a urinary fistula of spontaneous origin. Supra-pubic Cystotomy might also be performed in order to remove from the bladder a foreign body which could not be withdrawn through the urethra. In such an event the wound would be closed immediately after the operation, and union effected without delay, the urine passing at once through the natural passage. Such

an operation as the one just described would not be performed when it could be substituted by a simpler one, but there are conditions which would speedily jeopardize life, were it not for the fact that the bladder can be opened without special danger to life, at a point where there is ample room for the removal of a foreign body, or the formation of a temporary outlet for the urine. So far as the functional disturbance is concerned, it seems to be so inconsiderable as to be practically unworthy of consideration at least from a therapeutic standpoint.

ART. XXIII.—LAMENESS.*

BY E. A. McLELLAN, D. V. S.

Lecturer on Shoeing, Diseases of the Feet and Legs, etc., Columbia Veterinary College.

LAMENESS in horses is a common condition. In our practice as veterinary surgeons we shall be called on daily for our diagnosis in cases of lameness, and for this reason we must avail ourselves of every means in our power to gain that knowledge which will make us expert in the Etiology, Diagnosis and Prognosis of lameness. Men without the special training which the college affords who have been accustomed to horses from their youth, become, many of them very proficient in locating lameness. These men you will meet, and your knowledge must exceed theirs, if you would maintain your standing.

The most important aid to proficiency is a habit of close observation. In this lecture I shall endeavor to point out the particular parts of the external form of the horse which you must accustom yourselves to observe. Among these we will place first as most important and the one requiring the most careful observation, the hoof. The feet of horses assume a great variety of forms. As we stated in a previous lecture the form of the hoof is the effect of two causes, namely—inheritance and environment, including under the latter term, the effects

*Abstract of Lecture recently delivered at Columbia Veterinary College.

of shoeing, stabling, etc., not including the effect of disease. To some of these forms of feet names have been applied, as, flat feet, those in which the sole presents a flat surface, instead of a concave one. Low-heeled feet, those in which the coronary circle touches the ground at the posterior part of the foot. Then we have large and small, wide and narrow, which terms are sufficiently descriptive.

Now, these differences in form are such as require but little experience and observation to distinguish, but there are others which are more difficult to acquire, such as the difference in the length of the foot posterior to the pedal bone; an abnormal condition of the plantar cushion; a position of the pedal bone in which its articular surface receives unequal pressure from the *Os coronæ*, and column of bones above; a diseased condition of the pyramidal eminence of pedal bone; a condition of the hoof which predisposes to fissures of the wall; unequal pressure at the coronet; the relation of the plantar surface to the coronary border of the wall, the relation of the foot to the leg; its position in relation to the fetlock; the manner in which the feet are placed upon the ground during progression and their relation to the body while at rest. These points, and many others, are important for you to observe, for the reason that the external form and appearance, give us a clue to the condition of the parts within, and also enable us to foretell what is likely to occur in the future. Their importance is still further emphasized by the fact, that of all horses lame in the anterior extremities, the cause of the lameness in 75 p. c. of the cases will be located beneath the hoof.

At this point we might consider the question as to whether the hoof does, under any circumstances injuriously press upon or bind, or constrict the sensitive foot. If you look through the literature of Veterinary Surgery you will discover differing opinions upon this subject of contraction of the hoof; one set of writers holding that the hoof does contract and thereby produces disease and lameness; the other, that contraction is always the effect of disease. Among the latter, is Prof. Williams, who, in his Surgery, page 314, says: "Contraction of the hoof is not a cause but an effect of disease, an atrophy of the structures contained within the horny box consequent

upon diminished functional activity and adaptability of the hoof to the atrophied structures, which it encloses and protects."

Another writer, Prof. Copeman, who at one time was teacher of Theory and Practice at the New York College of Veterinary Surgeons, takes about the same ground. He says: "Contraction of the hoof is more an imaginary than a real state. There is no alternate expansion and contraction going on in the foot, as has been supposed, during ordinary progression, neither is there any antagonism kept up by the hoof tending to constrict the vascular structures, and these in turn resisting that tendency, but complete harmony of parts, and counterparts, both in their form and action subsists between the hoof and all it encircles, the same as between the outer covering and subjacent structures of every animal in all its parts." These ideas are not in harmony with my own, and I am inclined to believe that the practice of these writers was not always consistent with their theory. Prof. Williams upon the same page from which I have quoted makes an admission which overthrows his theory. He says, in effect, that the hoof does become contracted as a result of injudicious pareing. But this admission is fatal to his position, for opening the heels is not "diminished functional activity." Prof. Copeman in his position as veterinary editor of *Spirit of the Times*, frequently gave direction to soak and poultice the feet which would seem quite uncalled for if the hoof did not, under certain circumstances, become dry and rigid, and thus "constrict the vascular structures."

My own view of the subject of contraction is, that owing to a variety of causes which we will not here consider in detail but which are included under the terms, shoeing, stabling, domestication, etc., that the relative position of the hoof becomes changed. That by this change a lack of harmony exists between the hoof and what it covers—that the vascular structures are constricted and suffering and disease result. Although I am perfectly satisfied that what I have stated is a fact, yet it is not an easy task to make this clear.

In the quotation which I made from Prof. Copeman, the relations which exist between the hoof and what it encloses, were compared to the relation which exists between the skin and

subcutaneous tissues. Now, while this analogy is correct in so far as that the tissues are alike in their constituent elements, the hoof being a mass of epithelium, and also in part as to function, the hoof like the skin being protective, etc. ; yet, in one important respect in reference to this question of contraction, they are entirely dissimilar ; namely, in their *density* and *rigidity*. While the skin is soft and pliable, arranging itself in folds, or stretched to its utmost limit as the condition of the parts beneath demand, having in itself no power to mould the form, the hoof, hard and resisting, varying in thickness from one quarter to three quarters of an inch is not so adaptable, and has power to mould the soft structures within. The possibility of the harmony existing between the hoof and subjacent parts being disturbed, is rendered strong when we consider that its relation to the parts it covers may be changed suddenly by paring the plantar surface of the wall, or the application of a shoe. To explain ; suppose, that viewed in profile the anterior wall and pastern, present the same angle, if we cut down the heels one-half an inch, we change the relation of the pedal bone to the Os coronæ, and, consequently, the direction in which the weight is thrown upon it. This change of position in the relation of the bones is opposed by the action of the ligaments and flexor tendons, their function being to restore if possible the parts to their normal relations. This they accomplish in part, but at the expense of the harmony between hoof and sensitive structures. If you visit the shoeing shop, and notice the plantar surface as it is pared, you will discover in many feet indications of this lack of harmony in the patches of discolored horn. These may appear at any point, but are most frequent close to the wall at the toe, about the point of the frog and at the heels—at the latter place receiving the popular name of corns.

Again, if the wall is permitted to grow deeper upon one side than the other a condition in which the hoof will constrict the vascular structures will be produced, and in this way, a certain depth of horn is demanded on each side to place the pedal bone enclosed, in the proper relation to the column of bones above forming the limb ; but if one side becomes deeper than the other, greater weight will be sustained by that side

of the bone through its articular surface, and the greater the growth, the greater will be the disturbance of the pedal bone ; it will be pushed downwards bruising the sensitive tissue between bone and plantar horn. This anomaly is often noticed in the feet of cart horses, and in my experience produces the gravest results when found upon the outside quarter of the foot. The diagnosis of such a condition is obtained by a comparison of the depth of the horn upon each side, by the uneven wear of the shoe, by hypersensitiveness evinced when the foot is hammered upon the affected side, and upon being pared a morbid condition of the plantar horn in the form of a red spot will be disclosed beneath the bar. The foot will also be rested or pointed with more or less lameness.

Here we have a case in which owing to a change in the part of the hoof which is presented to the ground, we have a constringing of the vascular and sensitive structures of the foot. Not necessarily in this case contraction of the hoof, but a change in the normal relations of the parts, which produces a lack of harmony between the hoof and sensitive parts within. That this is the abnormal condition of the parts which in such a case exists, is easily demonstrated. Let the wall be reduced upon the high side, let the plantar horn be thinned for a considerable distance around the part which indicates injurious pressure, that is about the red spot ; let a shoe be applied so as to relieve that quarter of the foot from pressure as much as possible, and improvement in the gait of the animal will be immediate, and entire removal of the lameness will speedily follow. Again, let me explain another of the factors which produces contraction of the hoof. The ordinary foot is so formed that pressure by the shoe upon the lower border of the wall posterior to the quarters, or widest part of the hoof, has a tendency to narrow the heels, that is, the pressure is not exerted in a vertical line parallel to the direction of the fibres of the wall, but there is a *lateral* or *inward* pressure as well. In the natural unshod foot the frog assists the wall, at the heels, in the weight bearing function, but when elevated from the ground by the shoe its accustomed support must be added to the pressure exerted upon the wall, and it is not unreasonable to believe that this lateral pressure, or pressure inwards and

forwards which varies in degree according to the form of the heels, causes atrophy of the soft structures of the heels, and ultimately produced lameness by interference with the normal movements of the pedal bone or its appendages.

In that local inflammation in the posterior part of the foot known as corns, we have proof of injurious pressure. They may be either the result of maladjustment of hoof or shoe causing a change in the bearing of the pedal bone, or the result of this pressure upon the wall by the shoe. They are never, as by some supposed, the result of direct contact with the shoe, but the result of pressure exerted upon the sensitive parts, through the medium of the hoof. In confirmation of this theory is the practice of almost every horse-shoer when the heels are much turned in, namely, to leave a space between shoe and wall at this point, to apply the shoe "easy on the heels" as it is said, to prevent lameness. This abnormal pressure by the shoe upon the quarters causes more or less pain and atrophy according to the form of the hoof at this point. If the heel be long and the soft parts of the foot largely developed this atrophy may go on for a long time without materially affecting the gait, but if the heel be short, lameness quickly results. The lameness may be hastened by permitting the hoof to become overgrown or rigid from a long period of rest in the stable, as a result of sickness, especially if there has been much elevation in the temperature of the body. There are many other causes which might be mentioned as producing a condition in which the hoof is caused to constrict, or bind the vascular and sensitive structures within; but the strongest proof that such is the case is found in the fact that a removal of the contraction gives relief from lameness, and this proof I have thoroughly tested. The various methods which can be employed with safety to accomplish this result will be explained at some future time.

To recapitulate, we believe that contraction of the hoof is a cause of pain and disease. 1st.—That owing to the density of the hoof and its modification by growth, it has *power* to injure the sensitive parts enclosed. 2d.—That owing to a peculiarity in the form of the heel of the ordinary foot, and the unnatural process of shoeing, injurious pressure is exerted upon the

posterior parts of the foot ; and 3d.—That contraction is proved as a cause of lameness and disease by the fact that remedies which relieve the contraction relieve the lameness.

I have laid stress upon this subject of contraction, because I consider it important, that it is one of the fundamental facts which must be remembered in our discussion of our foot troubles. The history of Veterinary Surgery shows that its students have been divided upon this subject, one party going to the extreme in belief that contraction of the hoof was the cause of all foot and leg ailments, the other going to the other extreme, considering contraction always an effect of lameness and disease in the foot or limb. I believe there is a middle ground which is tenable between these opposing beliefs. Pressure by the hoof is a cause of lameness and disease, but of not *all* lameness. Contraction of the hoof is an effect of lameness, but is often a cause. A practical question just here is, how shall we know from external appearances whether contraction exists or not in a foot? There may not be lameness, the impairment of the action may be scarcely noticeable, and yet a pressure by the hoof and wasting has taken place. This we can determine by *inspection*. In the foot suffering from contraction the face of the wall posterior to the widest part of the foot is *concave* with the concavity looking outwards. Again, in the normal foot, the coronary circle, or superior border of the wall, should present nearly a straight line from the toe to heel, but in the contracted foot, from the quarters backward the line will be curved upwards and then downwards ; the horizontal lines in the wall, also will be noticed to follow this same direction.

We observe then the form of the hoof, and become familiar with that form which is likely to be associated with soundness, and also with lameness.

We next observe the *condition* of the hoof. Is it smooth, indicating a normal secretion, or rough, scaly, with fissures, or ridges? Is the frog sound and well formed, or is it ragged or shrunken with a discharge from its medium lacunæ?

One point that I wish to direct your attention to, is the condition of the plantar cushion, as indicated at its posterior portion. Is it thickened? In the normal foot, the hollow in the

heels leaves the heel bulbs well defined, but in navicular arthritis, this thickening is usually well defined. Some thickening can usually be detected, even in the incipient stage of this formidable disease, so that this sign becomes valuable in diagnosis. Another point necessary to examine carefully is the condition of the lateral cartilages of the pedal bone. Are they flexible or hard? If bone is occupying the place of these cartilages to any extent the elasticity of the step will be impaired, and if the animal is used for the carriage a long, hard drive is almost sure to produce lameness.

Another point which may assist diagnosis is to observe the relation of the foot to the leg.

In some cases you will notice that the toe turns in, and the heels are turned out, giving the appearance of having been pivoted in this direction on its articular surface. In this case the pastern stands directly over the inside heel. Such a condition predisposes to injurious pressure upon the inside quarter of the foot to corns and fissures of the wall.

In another horse we find a long pastern. The foot is placed upon the ground far in advance of the leg. In such a case great strain is put upon the ligaments which bind the articulations, and upon the flexors. In this form of leg a common seat for a lesion is the fetlock, either spavin of the suspensory ligament, the lateral sessamoid ligaments, or a sessamoidities. If the toe of the hoof is short, and its anterior face approaches the vertical, while the pastern being long it varied toward the horizontal, we might look for the lesion in the anterior lateral ligaments of the pedal articulation, while in case the toe of the hoof be long, and in profile presenting the same angle as the pastern, injurious pressure at the coronet by the hoof in front might be suspected. The first is more common in the hind feet, the last in the front feet. In the case of a long pastern, allowing the hoof to become excessively grown, greatly increases the danger of sprain of some portion of the leg.

Again, the manner in which the shoe is worn furnishes an aid to diagnosis. If worn excessively upon one side, as has been already stated, we suspect maladjustment of the hoof. If the wear is greatest at the toe we have a form of the limb which places extreme tension upon the flexors; the wear being

caused by the toe impinging upon the ground at the beginning of the act of flexion, or by a lack of motion in the pedal articulation, the foot being obliged to pivot upon the toe as the body is carried forward, as is the case in navicular disease, or ossified cartilages, or any condition in which the elasticity of these parts is impaired. If the wear is greatest at the heel, we look for the lesion at the anterior portion of the foot, as from laminitis or fissures in the wall at the toe.

We next observe the the position of feet and legs in their relation to the body. The horse when standing quietly assumes that position which brings the greatest repose. We must become familiar with the normal relative position of all the parts to detect any change from this, and also be able from our knowledge of the anatomy, and our general experience to determine the seat of the lesion from the position assumed. For example, when the hocks are the seat of the disease, the fore limbs are kept well back under the body, and the anterior border of the sternum is prominent, on the other hand, when the fore feet are diseased as in Laminitis, the hind feet are carried forward, the scapulo-humeral articulation is prominent and the sternum is retracted. This much in a general way, but in the discussion of the different diseased conditions of the feet and legs at some future time these points will be fully noticed. In passing up the leg we come next to the knee. Here we may have an enlarged condition, a distention of bursæ, or nodular growths. Enlargements on its inner aspect suggest interfering, which, perhaps, is not unsoundness, but a serious defect, which frequently ends in an unsound condition. Exostoses on the limb must be noticed if present. They are particularly grave, when situated on the pastern. We notice the condition of the shoulders. What is the appearance of the muscular covering? Is the spine of the scapula prominent, with a thin covering of muscle above it? Associated with this is the point of the shoulder prominent, giving hollowness to the chest in front. If so, you have indications of disease of the feet. Always view with suspicion the horse, even if he is going apparently sound, if the muscles are wasted, particularly at the superior portion of the shoulder.

In the hind limbs, the region of the hock, demands our

closest attention. It must be viewed at every angle. When its confirmation leads us to suspect disease, we must closely inspect, and in motion carefully note the manner in which the first few steps are taken. An inspection of the shoe is of value. In hock-lameness the toe is always most worn. Holding the foot in the position in which the shoer nails on the shoe will usually cause the animal pain, occurring in exostosis on the anterior border of the joint. A difference in temperature, if one only is diseased, can frequently be detected by applying a hand to each hock. In all the lesions of the feet and limbs, which we have mentioned, we must supplement our ocular examinations with palpation, manipulations by the hand to discover pain, heat, etc. Lesions in the region of the patella are usually referable to accidents, and their presence best detected from motion.

Fractures of the antero-external angle of the ilium are frequent and best detected by standing behind the animal. Having looked our horse over carefully while at rest for defects in his locomotary apparatus, we now proceed to inspect him while in motion.

(To be continued.)

EDITORIAL DEPARTMENT.

THE GERM THEORY.

DURING the past few years the question of discovering the cause of contagious diseases and of determining the best means for their prevention and cure has been prominently before the public mind. It has become of special interest since Tuberculosis has been declared to be of the same character. The investigation by Pasteur and Koch on the subject are familiar, and the results of their labors up to the present time are calculated to inspire hope for the future. Their clashing of opinions, we trust, will but make their ultimate conclusions the more convincing. Apropos of this subject, the following from the *Medical Times* and *Gazette* will be read with interest:

“Our readers may remember that at the late International Congress of Hygiene, at Geneva, M. Pasteur made a violent attack on Dr. Koch for having questioned the conclusions at which he had arrived on the subject of preventive inoculation, and an exciting debate was expected, when the German excused himself from replying on the ground of his imperfect command of the French language, and his opponent's total ignorance of any but his own. Dr. Koch, however, promised to publish his answer in the course of a few months, and he has now made his promise good. The different spirit in which the rival investigators approach the question is highly characteristic of their respective nationalities, and the discrepancies between their conclusions are owing to their different methods of procedure, besides which, it must be borne in mind that Pasteur is a chemist and has not enjoyed the physiological and pathological training of his opponent. Pasteur assumes that all communicable diseases are parasitic. The presence of any bacterium in the body of an animal affected with such a disease is, to his mind, sufficient to identify the micro-organism with the disease. He employs fluid media for cultivation, ignoring

the objections urged against them by Koch and his school, and he looks on all animals as equally fitted for experimentation, neglecting to avail himself of the differential tests that a variety of species affords. Thus, using the saliva of a dead dog for the inoculation of rabbits, he describes a new form of rabies, having failed to find bacteria in the secretions of rabid dogs while alive; whereas there is every reason to believe that his rabbits died of ordinary septicæmia. He fell into a like error when he announced his discovery of the bacillus of canine typhoid in the nasal mucus, not the intestinal glands, of horses after death. Even as regards splenic fever, Dr. Koch disputes Pasteur's claim to priority of discovery, since his own first publication appeared in 1876, and Pasteur's not till the following year. Koch does not, as some imagine, deny the possibility of the transformation of bacilli under altered surroundings into allied forms, nor the change of pathogenic organs into innocent ones, but he insists on far more crucial and exact evidence of such change before it can be accepted as an established scientific fact, much less a law of nature. He demands that in every case we must show the parasitic nature of the disease, that the micro-organism when found shall be cultivated in solid media until all chance of accidental admixture or access of other germs is excluded, and that the disease shall be reproduced by the inoculation of the pure bacillus with spores. That such demands can be realized is proved already in the case of erysipelas, of anthrax, of splenic fever and more recently of tubercle. The Imperial Board of Health of Germany instituted a series of experiments, under the direction of Dr. Koch, to test the validity of Pasteur's assertions respecting the immunity conferred by his inoculations with mitigated virus, and his theory as to the natural mode of infection. The results of these experiments are now for the first time made public. Pasteur, as is well known, asserts that by cultivating in meat broth at a temperature of 42° or 43° C. and freely exposed to the air, its virulence is steadily lessened. To diminish the danger, he advises two successive inoculations—the first with a very feeble virus, the second with one of greater activity. These directions were strictly followed out, the animals operated on being sheep. Injections of the *premier vaccin* produced

little or no constitutional disturbance, but a considerable number of the animals operated or died after inoculation with the *deuxieme vaccin*. If the survivors had been now absolutely protected, something would have been gained, but such was not the case either against artificial or natural modes of infection, for of six sheep, which, having already received the *premier* and *deuxieme vaccin*, ought to have enjoyed immunity, one died within two days of inoculation with unmitigated virus taken from a case of spontaneous splenic fever. Pasteur has advanced a theory that when the carcasses of animals that have died from any form of anthracosis or have been slaughtered, are buried, the bacilli are apt to be brought to surface by worms along with their casts; and that the bacilli gain access to the circulation of previously healthy cattle through the abrasions of the oral mucous membrane caused by pricking or coarse fodder. This Koch disputes, urging that it is only in the spore bearing stage that the microphyte is infectious, and that then mere ingestion is sufficient, breaches of surface being quite unnecessary. Soft food containing bacilli—in fact potatoes hollowed out and stuffed with infective matter—were carefully introduced into the throats of the animals. When the matter consisted of the bacilli alone, entirely free from spores, no ill affects followed; but on the experiment being repeated with spore bearing bacilli, whether fresh or such as had been dried for over a year death invariably followed within two days. To test the protection afforded by the so-called preventive inoculation against natural infections, seven sheep which had survived or resisted inoculation, with pure unmitigated virus, and thus had been thrice ‘vaccinated’ were fed with sporiferous matter in potatoes; two of the seven died of splenic fever on the second day. Dr. Koch, therefore asserts that, even as regards sheep and cattle, the immunity is by no means certain, while none whatever is imparted to rabbits, guinea pigs, rats and mice, and man himself may suffer repeatedly from anthracosis. No protection against subsequent infection is afforded by inoculation with the bacilli of erysipelas or relapsing fever, even after the most prolonged cultivation. So that Pasteur has utterly failed on the scanty basis of his partial successes in the case of two diseases—the so-called fowl cholera and anthra-

cosis—to establish any law of immunity; still less has he made any progress towards realizing his dream of extending its application to the prevention of every infectious disease to which man or beast is heir. His operations are more akin to small pox inoculation than to vaccination. They involve the same danger of keeping up the disease by infection of others without conferring equal security on the individuals subjected to it. In short, Dr. Koch maintains that, considering the proved uncertainty of such immunity as is imparted, its probable short duration, and the danger to life not only in the case of the animals operated on, but to others, and to the men in contact with them, Pasteur's preventive inoculation cannot, at any rate at present, be deemed of practical and economical value."

The theory of Pasteur that cattle can be infected by germs brought to the surface of the ground by earth worms from the buried carcasses of animals who had died from anthracosis is now accepted as a settled fact. As the worm has been convicted of spreading anthrax, the ant and fly may be regarded as agents for the dissemination of disease germs. And if this be true in the case of anthrax, may it not likewise be so as regards glanders, and other infectious diseases. Quarantine regulations and vaccination afford the means of protection from contagion by living animals; are there any to prevent the dead from becoming the centers of infection? A satisfactory answer is to be found in an article in the *Quarterly Journal of Veterinary Science*, in India, on sanitary science by James Mills, V. S., from which we quote :

"The proper disposal of the dead seems to me a question of paramount importance, although one evidently much neglected. By burial, however deep, certain parts of the country in time must become more or less contaminated and the atmosphere rendered impure, unhealthy and dangerous for both man and beast to live in. I would strongly recommend the cremation or reducing to ashes of the carcasses of all animals that have died from such diseases as anthrax or have been destroyed for glanders, and of all refuse or objectional matter, such as dressings from wounds or sores and stable litter. I am, perhaps, late in bringing this subject to notice, but it is to be hoped not

too late to do some good, for I set no better or more effectual mode of getting rid of disease germs than by fire, and, in fact, it is already evident that this is the only true way of preventing the spread of contagion. The disease germs of anthrax (one of the most fatal animal scourges we have in India, and one whose increasing prevalence, no doubt, is due to burial instead of cremation of the dead) as Pasteur has shown, can travel long distances through the medium of earth worms and retain their vitality for a very long period. Is it not urgent, therefore, on such authority as his, for us to use proper and thorough means for the destruction of these germs, and in that way endeavor to remove the cause of the disease, for while the cause exists the effects will never cease * * * * *

“Cinerators ought to be erected near all hospitals, cholera camps, sick lines for animals, and bazaars for the purpose of burning everything likely to convey disease or to prove insanitary. To show what can be done with these cinerators, I have been able, during the outbreak of glanders and Farcy at St. Thomas Mount, to cremate the carcasses of eleven of the horses destroyed on account of disease. The average time occupied in reducing them to ashes was about 12 hours per horse, and with no other fuel than stable litter.”

All these preventive measures are of great importance when the protection of animals are concerned; but how much greater is it when it concerns man, and we know that the infectious disease are not only transmissible from animal to animal, but also from animal to man. Actinomykosis, a new disease of animals is also capable of being so transmitted, and lately it has been found that Tuberculosis has this characteristic added to its original terrors. It behooves all, therefore, who are obliged to come in contact with infected animals to observe the greatest care, and take all possible precaution to avoid inception of the disease germs.

COLUMBIA VETERINARY COLLEGE AND SCHOOL OF COMPARATIVE MEDICINE.—We are pleased to announce that the above named institution has removed from 217 East 34th Street to its new location, 215, 217 East 37th Street, in this city. The work which has been so efficiently done in the old college buildings

during the few years since its organization has been accomplished under very great disadvantages.

The buildings were small and totally unfitted for the work required, and during the last term they were overcrowded.

The present site is centrally located in a quiet street, easy of access from all parts of the city, and in every respect an improvement on the old location.

The property has been purchased at a considerable cost by the President, Dr. Alexander Hadden, for the benefit of the college, and is to be entirely remodelled.

The front building is to be arranged for an office, laboratory, library, small lecture rooms, etc.

The rear building is to be torn down, and a building placed thereon, suitable for a model infirmary, lecture rooms, museum and dissecting room; at an additional cost of about \$10,000. When completed according the present plans the college will have a valuable commodious property suitable for the work to which it is dedicated, and so arranged as to be comfortable and attractive to the large and increasing classes which gathered within its walls.

Mr. J. H. Sanders, of the *Breeder's Gazette*, member of the United States Cattle Commission, has left for Europe on a special mission by appointment from the department of Agriculture at Washington, in reference to the International Live Stock Show at Hamburg, to our cattle trade with Great Britain and other European countries, to the crusade in Germany and elsewhere on the continent against American pork, and to a general review of the live stock interests of Europe as compared with our own. He will visit the principal live stock markets and breeding districts of Europe, and may give the readers of the *Gazette* the result of his observations in occasional letters while abroad.

Reports of Commencements and Societies.

ONTARIO VETERINARY COLLEGE.

The examinations were held on March 29th and 30th.

Professor Smith, in opening the proceedings, remarked on the extraordinary success of the College during the past session.

Dr. Duncan then read the names of the graduates, also the Prize List. The prizes were presented by the Lieutenant-Governor and other gentlemen.

LIST OF GRADUATES.

Henry B. Adair, Paris, Kentucky; James Addison, Newmarket, Ont.; Frank H. Armstrong, Ausable, Michigan; Vinton A. Berry, Marion, Ohio; James E. Blackall, Birr, Ont.; Cyrus J. Blank, Coopersburg, Penn.; Elmer E. Bowen, Tyre, New York; Robert W. Carter, Guelph, Ont.; Edward St. Geo. Courtenay, Waterford, Ireland; John B. Crane; Sharen Centre, Ohio; Samuel S. Dickenson, Zion, Ont.; Charles M. Dunn, Hamilton, Ont.; James W. Fisher, Baillieborough, Ont.; Edward R. Forbes, Toronto, Ont.; William R. Howe, Cleveland, Ohio; V. L. James, Springfield New York; Harry F. James, Ottawa, Ont.; George P. Jeffery, Toronto, Ont.; James Johnston, Dundee, Scotland; Robert A. Jones, Simcoe, Ont.; William Jobling, Parkhill, Ont.; Jesse R. Keeler, Harleyville, Pennsylvania; Thomas Kerr, Wingham, Ont.; Charles C. McLean, Meadville, Penn.; George Murray, Ridgetown, Ont.; John Newton, Weston, Ont.; John Perdue, Orangeville, Ont.; Mortimer W. Plank, Uxbridge, Ont.; Marshall M. Poucher, Oswego, N. Y.; Tipton J. Queen, Salineville, Ohio; John F. Quinn, Edmunton, Ont.; William R. Rowe, Bond Eau, Ont.; James W. Sallade, Reading Penn.; Allen S. Shimer, Shimersville, Penn.; Merritt W. Sine, Stirling, Ont.; James F. Smith, Port Ryerse, Ont.; Jacob Stallman, Rochester, N. Y.; John G. Stewart, Brantford, Ont.; Robert W. Stewart, Mt. Victory,

Ohio; George W. Simpson, Mackinaw City, Mich; Albert E. Thompson, Strathroy, Ont.; Joseph B. Thompson, New York; Henry Van Zant, Mongola, Ont.; Jonathan C. Whitney, Allan, Michigan; Willard E. Wight, Millbury, Ohio; J. H. Schoonmaker, New York.

PRIZE LIST—SENIORS.

Pathology.—Silver medal, C. C. McLean; second prize, H. F. James; third, H. B. Adair.

Anatomy.—Silver medal, H. F. James; second prize, C. C. McLean; third, H. B. Adair, and J. Newton, (equal).

Entozoa.—Prize, J. Newton.

Microscopy.—Prize, Dunn.

Chemistry.—First prize, Jobling; second, Newton; third, Dickenson.

Physiology.—First prize, H. F. James; second, Sallade; third, Dunn.

Anatomical Preparation.—Silver medal, Adair; second prize, V. L. James.

Materia Medica.—First prize, H. F. James; second Sallade; third, Sine.

Breeding and Management of Stock.—First prize, Jobling, 20 dols. in books (by Hon. Commissioner of Agriculture); second prize, H. F. James 15 dols. in books, (Council of Agricultural and Arts Association); third prize, Adair, 10 dols. in books (by Agricultural and Arts Association).

Gold medal for best general examination, presented by the Ontario Veterinary Medical Association, H. F. James.

PRIZE LIST—JUNIORS.

Anatomy.—Silver medal, L. C. Tiffany; second prize, J. F. Reed; third, G. W. Butler.

Pathology.—First prize, J. F. Reed; second, L. C. Tiffany; third, G. W. Butler.

Chemistry.—First prize, Silverthorne; second, Ardiel.

Physiology.—First prize, H. G. Reed; second, J. H. Reed; third, W. F. Berry.

The Lieutenant-Governor, having been thanked by the President for presenting some of the prizes, and for his presence among them, was requested to make a few observations, when he said to the President and gentlemen that it gave him much

pleasure as Lieutenant-Governor of the province to show by his presence there his appreciation of the Ontario Veterinary College. Judging from all that he had at times heard of it, the high status its graduates had attained, both in Canada and in the United States, the increasing number of its students, greater this year than ever before, this College, in his opinion, well deserved any compliment that the Lieutenant-Governor, as a representative man, could by his presence pay to it. He congratulated the fortunate possessors of the respective prizes, but told them that promising and suggestive of success in after-life though these prizes were, they should not run away with the idea that their future advancement was to-day secured. More experience of life would teach them that if they wished to obtain that success which their worthy President had won, they must, like him, have a knowledge of men as well as of animals, cultivate that courtesy, energy, and and judgment in business matters which he had displayed, and which had done so much to place this College and himself in the highly creditable position they now occupied. The veterinary knowledge they were now acquiring was specially useful in Canada, which was the happy and prosperous home of hundreds of thousands of farmers, who, by the increased attention they were now giving to the raising of the best breeds of horses and cattle, were opening up a good field for the profitable employment of those he saw before him. The time was not far distant when the reliable and well-educated veterinary practitioner would take the place in this country of the unreliable and dangerous quack. He wished the College and its students every prospect, some of whom were, no doubt, leaving it for the last time this term, but he hoped they would not soon forget the useful knowledge acquired within its walls. (Applause.)

After remarks from the Mayor, the proceedings terminated.

STATE CONVENTION OF VETERINARY SURGEONS IN CHICAGO.

We noticed in the May number of the *United States Veterinary Journal* a call for a State convention of veterinary

surgeons at Chicago, in order to adopt measures calculated to improve and protect the welfare of the profession. Prominent among the signers we notice the name of our friend, Dr. W. Sheppard, of Ottawa, a gentleman of acknowledged ability and very enthusiastic in all that appertains to veterinary science. The Doctor was elected First Vice-President. He is a very active worker, and gave ample evidence of it, not only in directing and perfecting the organization, but in reading an essay on lameness, in order to keep the ball rolling. We congratulate the veterinary profession of Illinois for the step taken in advancing the interest and welfare of veterinary science, and in its choice of able workers. May the good work extend.—*Spirit of the Times*.

CORRESPONDENCE.

NEW YORK, April 21, 1883.

DEAR DOCTOR:—Since my communication on Abortion in Cows was read before the Farmers' Club, the following interesting cases have occurred. Two cows sent to the farm for service were returned to their owners after passing one heat, as probably being in calf. Their exposure or stay in my herd was respectively 23 and 26 days, and both prior to the second abortion, which occurred December 5th. One of these cows has been since October 26th in a stable 30 miles distant, with a farrow cow. Both were kept tied in their stalls. No jumping and consequent strain to excite suspicion in that direction. (I mention this, as some men are averse to admitting any cause but mechanical or external injury.) She aborted at 6 months on March 27th. The other case aborted at 6 months 9 days, 40 miles distant from the farm in an opposite direction.

Before the above mishaps occurred, I warned the owners of all cows that had been on the farm to separate them from other pregnant cows, and to keep apart for several weeks after aborting, or even should they carry to term. I have other cases to hear from. No mishap has occurred as yet to any animal that came to the farm for service and went away at once.

Yours truly,

EHRIK PARMLY, M.D.

INDOCHOROIDITIS—PERIODIC OPHTHALMIA IN HORSES.

To the Editor of the Journal of Comparative Medicine and Surgery:

DEAR SIR:—In your valuable JOURNAL of April, 1883, in the editorial

article you speak of Messrs. Hocquard and Bernard's recent investigations on this subject. Since then I have seen their paper on this subject, and I fail to find anything new or startling. They simply arrive at the conclusion that was promulgated in this JOURNAL by me in April, 1881, two years ago. Since that paper was written I have further investigated the disease, and I have not as yet seen anything that would go to show the parasitic origin claimed by Koch, Bertin and others. That organisms may be found in these diseased eyes I do not doubt; but were they conveyed there by instrument during the examination of the eye, or did they exist there before? I think our German theorists are carrying the matter too far. Are the organisms found in the healthy spermatic fluid evidences of disease? That the disease is an indochoroiditis, no one can doubt, who examines the diseased eye with the ophthalmoscope. I am sorry that our transatlantic friends do not read your able and interesting JOURNAL, for if they did they might keep better posted on current events.

Yours truly,

WILLIAM OLIVER MOORE, M.D.

USE OF SULPHUR.

In answer to our correspondent from Austin, Texas, who desires us to *give the full effects of sulphur on sheep in wet weather*, we would say, use it not at all in wet weather. As upon the human patient, externally, so upon sheep or other domesticated animals it should be used only upon a quarter of the body at one time in the form of ointment. When it is deemed necessary to use sulphur in treating animals, they should be kept in warm, airy stables, or, if in the open air, warm, sunny exposures should be sought for them.

Those who use sulphur for the destruction of lice can succeed better with carbolic acid or white precipitate ointment of the strength of a drachm to the ounce of lard.

Sulphur has produced rheumatism in man and beast when long and injudiciously used.

CASE DEPARTMENT.

I.—A CASE OF STRYCHNINE POISONING IN A DOG.

REPORTED BY F. S. BILLINGS, V. S.

A very valuable pointer belonging to a Mr. W. of Boston was found in convulsions in the yard early A. M. Saturday, May 5th. The usual neighborly assistance was volunteered, but without effect. At about four P. M. we were called in. Case looked serious. Patient much exhausted. Spasms

very frequent. Tonic spasm of jaws, so that they could scarcely be opened. Eyes protruding. Respiration frequent and difficult. Visible mucous membranes cyanotic. Extremities cold. Nose dry. On the least touch patient went immediately into clonic spasms with opisthotonos of the most extreme degree. Eyes almost protruding from sockets and fixed. Treatment:

Tortortus stibs, 0.72
 Radix ipecac, 5.00
 ℞ Et div in pulv. no ii,

One to be given at once, second in half hour. Emesis did not follow the first. The second was followed by violent emesis, and great relaxation of symptoms. Did not use anesthetics for this reason. The emetic was not given with any hope of relieving the stomach of poison, as too long a time had elapsed to render such a procedure justifiable, but to produce depression and relaxation. I think it is a mistake to torture such a patient with the application of the stomach pump in strychnine cases when so much time has elapsed. Such interference simply augments the spasms.

The next step was to introduce a solution of atropine subcutaneously. One gramme of a solution of 0.12 gramme to 30 aq. was used, and injections being made every hour. Aside from this, I ordered a mustard poultice to be applied over the spine for half an hour, and then to be washed off as easily as possible, after which patient was enclosed in blankets, heated warm as possible before the fire. After the emesis was thoroughly over, two compound cathartic pills U. S. were given, which operated during the night.

Visited patient again at 8 A. M. Sunday morning. All appearance of spasm had disappeared, and the dog was quite intelligent, but still very weak. Ordered beef tea and light diet, and left him as cured. Have heard nothing since.

II.—INGROWING EYELASHES—TRICHIASIS.

REPORTED BY WILLIAM OLIVER MOORE, M.D.

Recently I had brought to me a fine blooded dog, suffering with an inflammation of the left eye. The animal appeared to suffer considerable pain, and from the eye tears were streaming. On inspecting the eye I found the conjunctiva of the eye-ball reddened, and especially so at the outer and upper part. The cornea was also quite milky on the outer half. On more careful examination the cause for these appearances of the eye-ball was found to be the inserted eyelashes of the outer half of the upper lid. The constant rolling of these hairs had caused the irritation of the globe. The cause of the inversion was the cutting of the eyelashes by the attendant, and when they grew out again, instead of taking their proper direction, they grew in toward the eye-ball. MORAL.—Never cut eyelashes.

Treatment consisted in cutting out an oval piece of skin from the upper eyelid directly over the site of the inverted lashes, the piece about one-fourth of an inch wide and one-half inch long, and then bringing the cut surfaces

together by sutures. This procedure turns the lid edge outward, and the hairs thus turn in the proper direction. The dog made a good recovery, and was entirely relieved.

III.—BURSAL ENLARGEMENT OF THE TENDON OF THE FLEXOR PEDIS PERFORANS.

REPORTED FROM DR. BERN'S CLINIC HELD AT HIS PRIVATE HOSPITAL.

The subject in hand was a young horse *æt* six, with no previous history, except that the animal had had an enlarged hock for an indefinite period of time.

The greatly enlarged tarsus was carefully examined by the senior students, and they advanced the opinion that the fluid should be withdrawn. Dr. Berns was also of the same opinion, and made an incision into the tumor, and one-half pint of fluid escaped. The cavity was then injected with a solution of carbolic acid.

The Doctor did not apprehend any serious consequences, and therefore gave a favorable prognosis.

For ten days after the operation the serum continued to escape. During the first five days about four quarts were discharged daily. The hock diminished in size, but there was not the marked improvement looked for.

After this the hock was blistered, without decided result.

Although the operation and after treatment did not accomplish all that could be desired, there was some improvement after a long time.

IV.—A NOVEL WAY OF REMOVING A FOREIGN BODY FROM THE ŒSOPHAGUS.

REPORTED FROM DR. NETMAN'S CLINIC HELD AT HIS PRIVATE INFIRMARY.

The Doctor was called to see a bay horse which was choking. The history was that he had been eating carrots. Treatment:

He was unable to reach the foreign body with his hand. He gave a dose of oil at once, but it failed to dislodge the body. The horse's mouth was then opened, and held open by a mouth speculum. Then a common water hose, which was at hand, was passed through the speculum down the œsophagus until the foreign body was reached. [Whether the hose was used simply as an œsophageal bougie, or the force of the hydrant was called into play, was not stated by the clinical reporter, but we inferred that it was flooded down.—Ed.]

V.—ABORTION EPIZOOTIC CELLULITIS.

REPORTED FROM DR. MCLELLAN'S CLINIC AT THE THIRD AVENUE CAR STABLES.

In this disease the eyes are greatly inflamed and the legs often swollen. When an abscess occurs, with swelling in the intermaxillary space, it is generally termed *Febra Pyogenica*; when the catarrhal symptoms are most prom-

inent, Influenza. When the eyes are greatly inflamed, the legs swollen, then we have the characteristic type termed cellulitis, and these are the prominent symptoms in this case.

Symptoms.

Pulse extremely weak and rapid. Temperature, 104.5° F. Slight discharge from nostrils. Mucous membranes injected, submaxillary glands swollen. The œdematous swelling of the limbs is also very well marked. Slight difficulty in breathing, and on pressing in region of throat animal evinces increased pain. A diagnosis of epizootic cellulitis was therefore made.

A favorable prognosis was given, for the reason that this form, when properly treated, as a rule terminates favorably and in a comparatively short time. But frequently animals are apt to abort, as it is termed; the attack starting in all right, but suddenly coming to a terminus.

Treatment.

During the early stages, when the fever is a marked element in the disease, tincture of aconite in drachm doses may be given. An ounce of nitrate of potassium may be added to their drinking water. Further than this treat the symptoms. If the sore throat be a marked lesion, use stimulating liniments externally. If there is great difficulty in breathing, the head may be steamed either simple or medicated.

With great irritability of the bowels, hydrastis is often serviceable.

December 20th, 1882, at a later clinic, Dr. Hough, the surgeon in charge of the infirmary, reported that the attack aborted on the 17th inst. After the previous clinic these symptoms intensified. The catarrhal symptoms then being most prominent, with considerable discharges from the nostrils, and also from eyes. Swelling in the intermaxillary space. Mucous membranes more congested. Pulse frequent and feeble. Temperature 104° F. Legs very œdematous. Breathing, however, nearly normal.

The left lung at this time was somewhat affected; consolidation of one lobe made out positively.

Treatment at this stage of the disease calls for tonic and stimulating remedies. Aconite is now positively contra-indicated, and if administered would surely cause a fatal termination. A mixture containing Liq. Ammon. Acetatis, Tr. Gentian and Iron, in such proportions as the indications may seem to call for, are to be pushed strongly. Some advise the carbonate of ammonia in combination with camphor. Dr. McLellan finds that alcohol serves the purpose as a stimulant quite as well as anything. In the country he often uses cider brandy in gruel to stimulate the heart and aid in digestion and absorption, thus perfecting the assimilation power and adding permanent strength and tonicity to his patients.

The prognosis in this case, with active treatment, should be considered favorable rather than otherwise. The swelling of the legs is in all probability due to a weak acting heart, and if that is attended to the œdema should not be regarded as in itself a bad omen. The reason of this œdema is on account of the distance from the centre and the dependency of the extremities, so that the veins and lymphatics fail to do their duty.

However, we were later informed that the animal died January 3d.

A necropsy was made, but the only positively attainable information was that one of the lungs was in a state of hepatization. Probably collateral cedema of opposite lung caused heart paralysis, and was the cause of death.

VI.—INCIPIENT STAGES OF SCABIES FROM SARCOPTES CANIS.

REPORTED FROM DR. STICKLER'S CLINIC AT THE COLLEGE.

The patient is a black bitch (pointer) the property of Prof. Laudy. She was sent to the hospital December 18th. About three weeks ago she began to lose hair, in spots about the size of a ten-cent piece, on face and body, which was accompanied with a slight amount of itching; these spots gradually increasing in size.

The above diagnosis was given, and a favorable prognosis rendered.

Treatment.

The following ointment to be used every half hour, at first; later on, less frequently;

R

Adeps,	. . .	Oi.
Sulph. Sublimat,	. . .	℥iiss.
Sodæ Bicarb.,	. . .	℥vi.

℥ Sig. ex. use.

An Anthelmintic was given in the shape Oleum Santonis ℥ii— that the worms might be destroyed.

VII.—SPINAL MENINGITIS.

REPORTED FROM DR. BOWER'S INFIRMARY.

A gray horse, set 12, had been sick for twelve days. Two or three days before this attack fairly set in the animal was seen to stagger in his gait. After that he was found in his stall one morning unable to rise.

He was at this time placed in a sling and raised to his feet, and kept there by its aid. All power of motion in the posterior extremities was suspended, accompanied by spasmodic contractions of the anterior extremities. After placing the animal in the slings, anodynes and anti-spasmodics were employed; the bladder was emptied by means of a catheter. It was impossible to give a cathartic, either in a ball or drench. Catharses, however, was obtained by 15 ℥ of Oleum Tigllii, mixed with 3℥ of Oleum-Olivæ. By drawing the tongue well forward the menstrum was placed well back upon the root; the indrawing of the tongue carried it well back, followed by a most satisfactory result.

When the acute inflammatory symptoms had subsided, the anodynes and anti-spasmodics were discontinued. The horse was placed upon Nux Vomica and Chlorate of Potass, 3℥. of the former and 3℥. of the latter in powder, one each night, containing the above amount.

A favorable prognosis had been given.

The improvement was steady up to the 12th day, when he accidentally slipped from the sling. He was immediately replaced. This accident, however, proved a slight draw back in the previous steady progress toward recovery.

By the end of December, or about two weeks from the onset of the disease, the animal had completely recovered.

VIII.—SIMPLE LAMENESS.

REPORTED FROM DR. ROBERTSON'S CLINIC HELD AT HIS INFIRMARY.

Aged bay horse, 15½ hands high.

One morning the animal was found in the stable and could not readily back out. This patient is in the habit of getting cast. The night before last he was apparently all right.

Present Symptoms.

There is swelling at the stifle; a marked unwillingness to flex the joint; and pain upon pressure. When standing the leg is slightly flexed, with toe in advance of the opposite one.

The diagnosis is stifle lameness, due to some sudden injury.

The prognosis in such cases is generally favorable.

The treatment which I should advise would be to first bathe the part with hot water, say twice daily, and then apply the following:

R

Aquæ Ammoniaë Fort., . . .	3vi.
Olei Terabinthinæ, . . .	3i.
Tr. Capsici, . . .	3i.
Ether Sulphuric, . . .	3ss.
Linamenti saponis, . . .	3viii.

M sig. ex. use.

This liniment to be applied twice daily after the fomentations. Later, improvement was recorded.

IX.—A CASE OF JAUNDICE.

REPORTED FROM DR. ROBERTSON'S CLINIC.

The patient was a bay horse 16 hands high, aet 12. One year ago this horse had a similar attack. Three days ago showed symptoms of indisposition. Pulse, 56; tongue, furred and of a peculiar greenish yellow, conjunctivæ injected and of a yellow color. General symptoms of lassitude; feces hard and dry; urine scanty with a brick-dust deposit; pain on pressure over loins of right side.

Treatment.

Mild aperients, followed by following powders:

R

Pulv. Feni Exsic.,	3ss.
" Cupri Sulp.,	3ii.
" Cinchonæ,	3i.
" Cantharadis, grs., . . .	xviii.

℞ et fiat et div in Chart no vi.

Sig. One, twice daily.

To be fed upon mash and carrots.

Two weeks later the horse was well and at work.

X.—MULTIPLE COMMINUTED FRACTURE OF THE SESAMOID BONES OF BOTH FORWARD EXTREMITIES.

REPORTED FROM DR. McLELLAN'S CLINIC.

This case has been abstracted from the Clinical Reports of the Columbia College for the Winter of 1882-3.

History of Case.

The animal from which the specimens were obtained was a car horse which was taken from the stable in the morning apparently sound. After being driven for a short distance he slipped; but according to the driver's statement, did not fall for some time. The driver at once saw that the animal was too severely injured to finish the trip, and he was at once returned to the hospital.

He was brought into the hospital of the car stable just as the clinic was in progress, and was there examined by Dr. McLellan and a large number of students from the college.

When compelled to move he would carry his posterior extremities well forward, the anterior portion of the body straight, and positively refuse to take step by step.

The animal when brought out upon the floor manifested symptoms of great agony. Then he would lie down, which seemed to give him great relief. The anterior extremities were in a state of semi-flexion.

With great exertion and considerable assistance the horse managed to regain his feet unaided, but upon standing a very few minutes evinced great suffering, which apparently increased with every extra minute that he stood.

The symptoms were similar to those of acute laminitis, and might, without careful manipulation, be mistaken for that disease.

The history in a case like this would rather bar out laminitis. The feet of the animal, standing well back upon his heels, with joints to the knee in semi-flexion, would indicate something further than laminitis.

The parts were manipulated and examined as well as could be without securing the animal, and a hasty diagnosis made.

This was rupture of the flexor pedis perforans tendon, near the fetlock.

The prognosis rendered was unfavorable, and the animal was at once destroyed.

Necropsy—Immediately. As there was no indication of internal disease, none of the viscera were removed. The limbs were removed and taken to the college dissecting rooms for closer study.

[When the joint was examined distinct crepitation could easily be detected, and there ought not to have been any difficulty in detecting it during life, as there apparently had been no great swelling prior to death.

The way in which the injury occurred we think quite easy of explanation. The posterior extremities shot forward under the body, causing him to sit suddenly down. This would have a tendency to cause the anterior extremities to shoot forward and let the weight of the body down upon these sesamoid bones. The efforts of the animal to rise, and the pounding of the bones upon the irregular paving stones, would easily explain the cause of the injury.

We have often seen animals struggling in this awkward position, and wondered why they were not more severely injured. Treatment, of course, would be of little avail, unless well supported by an immovable apparatus. —Eds.]

XI.—KERATITIS IN A DOG.

REPORTED FROM PROF. MOORE'S CLINIC AT THE COLLEGE.

A little black dog was brought in who had received an injury while playing with a kitten. The above diagnosis was made, and the disease considered of a mild type and one in which a favorable prognosis might be given.

The following treatment:—Nourishing diet, as the animal was emaciated, and the use of grs. ii. solution of atropiæ sulphatis. The eye to be bathed with warm or cold water, which ever seemed to give the animal most relief.

The dog was also suffering from alopecia or mange, and the professor suggested that sulphuric acid be applied with a camel's hair-brush. Ultimate recovery was the final result.

XII.—INTESTINAL CALCULUS FROM A HORSE.

REPORTED FROM DR. WALTON'S CLINIC.

The patient was a large bay horse used for draft work. The horse was first taken sick February, 1883. The symptoms at that time were those of ordinary colic, but they developed and increased with unusual rapidity. The case was at first treated for an ordinary colic, but instead of improving he steadily grew worse. The second day of the attack, the animal being so bad was brought to the hospital, and from that time was under constant observation.

For three days there was no movement of the bowels, although Oleum Tiglii and all forms of drastic cathartics were used in conjunction with enemas.

Treatment, however, proved of no avail, and on the sixth day the horse died without a positive diagnosis having been made, further than some form

of intestinal obstruction. At the necropsy the true cause of this obstinate trouble was elucidated. A large calculus was found in the colon about the size of a man's head, and as hard as a stone. It could hardly be broken with a hammer. The other organs showed marked congestion, but otherwise were normal.

XIII.—HYDATIDS OF THE LIVER FROM A CAMEL.

REPORTED FROM THE COLLEGE.

A large camel from the Central Park was brought to the hospital almost in a state of collapse. No previous history was obtained. The animal was only in the building for a few hours.

At the necropsy the principal lesion worthy of note was found in the liver, which was filled with hydatid cysts, which resulted from the migration of the larva of the *taenia echinococci*. These cysts were in various states of retrograde change. Some were almost calcareous, some in a suppurative state, and some nearly cystic. The hooklets diagnostic of this lesion were easily demonstrated in great abundance at one of Prof. Satterthwaite's lectures.

XIV.—PLEURO-PNEUMONIA CONTAGIOSA.

REPORTED FROM OBSERVATIONS KINDLY AFFORDED BY DR. HAWK.

The class went to Newark, on January 20th to investigate some typical cases of this disease prior to their destruction. We went from the station to where the animals were confined.

The previous history of the cases was as follows: They were native breed and were isolated from a herd of fourteen. Two animals prior to this case had contracted the disease and been destroyed. The one in particular which we had been called to see had contracted the disease so far as could be determined, eight days before. During that time she had lost in weight 150 pounds. Prior to the commencement of the attack she was considered in prime condition, and was then giving twelve quarts of good, rich milk.

From the onset of the attack the quantity of milk has gradually and steadily diminished and now is entirely suspended.

Although the milk has ceased flowing and there has been a marked loss of flesh, the general appearance of the animal is somewhat better than it has been.

At the period of invasion the hairs all pointed toward the head and the animal was very dull; had the dry cough peculiar to the disease; the back was arched; marked elevation of temperature; loss of appetite; bowels constipated; horns alternately hot and cold; breathing rough and harsh.

Physical Examination.—Revealed dullness over the whole left lung.

At the time seen by class the symptoms were as follows: Animal emaciated; staring coat; back slightly arched; anterior feet wide apart

when standing; posterior extremities well forward under the body; extremities cold; inspiratory and expiratory murmur irregular and harsh; no secretion of milk; mucous membranes pale. Respiration, 21 per minute.

On Palpation.—When the chest wall was manipulated there was marked evidence of tenderness.

The temperature at this time was 140° F., pulse 82, rapid and very feeble and small. No positive friction fremitus could be detected.

Upon auscultation bronchial breathing was the characteristic sound heard with a few crepitant rales.

The animal was immediately destroyed and a necropsy made.

The lungs were first removed. The right was firmly adherent to the chest wall and was about twice the normal weight.

The lungs were sent to the pathological laboratory for examination.

The specimen was the subject of one of the pathological lectures. The specimen showed all the four stages of this disease excepting the last, or that of gangrene. A small portion of the lung was in the primary stage or that of congestion; a small territory also was in the stage of red hepatization, but the greater portion was in the third stage or that of gray hepatization, which was rapidly passing to the suppurative and gangrenous condition.

The marbilization of the lung was well marked both by these different stages and the thickened bands separating the separate lobules. These bands between the lobules were of an inflammatory nature and were composed of several fibres, pus and a little blood. Each little lobule is a separate lung in miniature. In the cow's lung, being so large and distinctly separated, they can, in the normal state, be readily recognized, but now they are still plain. In the human being the lobule are so small and so closely packed together it is almost impossible to isolate them. This last is also true of the horse's lung. There was also present, as a marked lesion, a bronchitis, but this, in our belief, is a secondary process to the pleurisy and interstitial pneumonia.

XV.—CHOREA IN A HORSE.

REPORTED BY JOHN LINDSAY, D.V.S.

April 25th, 1883.

Was called to attend a horse suffering from stiffness of the posterior extremities. When compelled to move, the legs were carried like a couple of sticks, there being no apparent movements at the joints. The temperature was 102° F., pulse 48, membranes of the eyes and nose injected, respirations normal, eyes dull, and head dependent.

My diagnosis was spinitis from over stimulation, as I learned from the owner that the animal had recently been changed from six to twelve quarts of oats per day, and at the same time had been allowed to remain unused in the stable for one week that he might make a good appearance for sale.

I ordered all grain stopped and placed him upon bran mashes, enemas and hot applications to loins.

26th.—Stiffness somewhat less; temperature normal; pulse normal; mucous

membranes clear; appetite and thirst normal. Gave a pill containing full dose of aloes and calomel.

27th.—The cathartic given the day before worked nicely. The stiffness all disappeared; urine now clear as water; caught some, and upon examining it found that it contained sugar; thirst greatly increased; appetite good: the left leg was automatically thrown against the side of stall with considerable force. I now ordered kali bromidium $\frac{3}{4}$ ss to be given three times a day.

28th.—The automatic movements have changed from the left side to the right and are as violent as those on the left side yesterday. Treatment continued.

29th.—The automatic movements have stopped while the animal stands quiet, but commences again as soon as the animal attempts to move, although very moderate.

30th.—The animal now moves freely and naturally; thirst normal; urine of a pale, sherry color; appetite good. The patient discharged, cured.

In this connection I would say that I have seen a number of similar attacks in pigs and they have all recovered upon the bromide treatment after free catharsis.

HUNTINGTON, L. I., May, 1883.

REVIEWS.

FEEDING ANIMALS: A PRACTICAL WORK UPON THE LAWS OF ANIMAL GROWTH, ESPECIALLY APPLIED TO THE REARING AND FEEDING OF HORSES, CATTLE, DAIRY COWS, SHEEP AND SWINE. By Elliott W. Stewart, one of the editors of the *National Live Stock Journal*; late non-resident Professor of the Principles of Agriculture in Cornell University. With Illustrations. Sold by the Author. Price, \$2. Lake View, Erie Co., New York.

The above is the title of a work, the result of thirty years of enlightened experience. One of the rare things to be desired is a book compiled from such a source, and is to be preferred to others containing many theories advanced after thirty minutes of profound reflexion.

A careful perusal of Mr. Stewart's work stamps it emphatically as a practical, common sense production of long and earnest painstaking labor.

Mr. Stewart sensibly says in the preface to his book: "The author has not ventured into the discussion of veterinary remedies." But then, he throws cold water on his practical labors by adding: "Contenting himself with the description of a few simple water remedies, endeavoring to impress the reader with the necessity of preventing diseases rather than that of curing them." This is the only theory Mr. Stewart indulges in, and as his intentions are prompted by a kind heart, and as he is a layman, the veterinarians can afford to generously excuse him. It

would have been far wiser in the author to have referred to Mr. Jennings or some other catalogues of veterinary works for information on the subject. We leave this matter to remark that the *analytical index* is studiously and faithfully compiled from the pages of the work. It is a fair sample of Mr. Stewart's painstaking methods of labor. "Feeding Animals" is replete with food for the careful student. The railroad companies, omnibus companies, and all companies using horses should have a copy of Mr. Stewart's work to guide and instruct them to properly feed their hard worked horses. Every stable in the country should have "Feeding Animals," if no other book. If any veterinarian will handle the subject of treatment and care of horses, or other animals as practically as Mr. Stewart has done we will willingly commend his labor in this Journal. We sincerely recommend "Feeding Animals" to the general public.

BOOKS AND PAMPHLETS RECEIVED.

L. HIPPOPHAGIE ET LES VIANDES INSALUBRES par M. E. Decroix. Paris.

This pamphlet gives the history and progress of the use of horse flesh as food and proves that while the meat obtained from the horse, mule and ass is not so tender as other meats it is equally nutritious and more economical. In Paris hippophagie is on the increase, 10,000 horse and 500 mules and asses being consumed in one year. It is an advantage to the proprietor, causes improvement in the stock and is endorsed by the Society for the Prevention of Cruelty to Animals.

"DEMODEX THYLLOIDES" IN THE SKIN OF CANADIAN SWINE. By R. R. Wright, of Toronto. Reprint from proceedings, Canadian Institute.

Mr. Wright states that this cutaneous parasite exists to some extent in the pork sent to the Toronto market. Its occurrence hitherto has been recorded only by Dr. Csokor, of the Veterinary Institute of Vienna. The parasite causes sub-cutaneous abscesses, the size of a hazel nut. As it is confined to the skin and does not affect the general health of the animal, the treatment consists simply in the removal of the parts involved, thereby preventing the flesh from becoming unfit for food.

TRICHINÆ. By W. C. W. Glazier, M. D., Detroit. Johns Hopkins University Circulars, Annals et Bulletin de la Société de Médecine de Gand. JOURNALS.—La Clinica Veterinaria Milano.

This number occupies itself principally in recording the favorable results of Anthrax Vaccination according to Pasteur's method as practised in Turin and other places in Italy and on the diagnosis of rabies with communications from Pasteur, Roux, Chamberland and Thuillier; also one from Paul Bert on the same disease.

The Veterinarian London. The Veterinary Journal, London. Der Zoologische Garten, Frankfurt. Schweizerisches Archiv für Theiirheilkunde, und Thierzucht, Bern, Archiv für Wissenschaftliche und Practische Thierheilkunde, Berlin. Journal de la Société contre L'Abus du Tabac, Paris. Kansas City Review of Science and Industry. Chicago Medical Journal and Examiner. The Medical Record. New York. The College

and Clinical Record, Philadelphia. Annals of Anatomy and Surgery, Brooklyn. New England Medical Monthly, Sandy Hook. Chicago Medical Review. Virginia Medical Monthly, Richmond. Nashville Journal of Medicine and Surgery. The Southern Clinic, Richmond. The Western Medical Reporter, Chicago. Journal of Cutaneous and Venereal Diseases, New York. Denver Medical Times. The St. Joseph Medical Herald. San Francisco Western Lancet. The Weekly Medical Review, Chicago and St. Louis. The Blacksmith and Wheelwright, New York. National Live Stock Journal, Chicago. The Breeder's Gazette, Chicago. Cultivator and Country Gentleman, Albany. Indiana Farmer, Indianapolis. Truth, San Francisco. Weekly Drover's Journal, Chicago. The Chicago Tribune. The Medical Register, Philadelphia. Spirit of the Times, New York. United States Veterinary Journal, Chicago. Horseshoer and Hardware Journal, Chicago.

Tidskrift for Veterinar-Medicin och Husdjursskotsel utgifven af C. A. Lindqvist, Stockholm. Giornale di Anatomia, Fisiologia e Patologia, degli Animali, Pisa. Il Medico Veterinario, Torino.

Obituary.

EDWARD F. DOWD, of this city, died June 13th, 1883, at the age of 20. He was born in New York and educated in her public schools. At the beginning of the lecture term in October, 1880, he entered Columbia Veterinary College as a student, completing the course in the spring of 1882, but not receiving his diploma being under age. Soon after he left college he developed symptoms of lung trouble (Pulmonary Tuberculosis), steadily failing in health, although not confined to his bed until a short time before his death. He was hopeful of final recovery until the last few weeks of his life. When convinced that he could not recover he manifested a submissive Christian spirit, quietly and peacefully passing into the sleep of death. His student friends remember him as a genuine attractive companion, full of life and physical vigor. He had a remarkable memory which enabled him to take high rank as a scholar among his associates. Having once heard a thing, and comprehended it, he never forgot it. Had he survived there was every indication that he would have become one of the brilliant lights in the firmament of comparative science.

CHARLES D. HOUSE, D.V.S., died at the residence of his uncle, P. C. House, M. D., in East Bethel, Vermont, on Thursday, April 3, 1883.

Dr. House was a native of Vermont. His early education was limited to such knowledge as could be obtained by irregular and intermitting attendance at a district school.

Early in the war for the Union he enlisted in the volunteer army and distinguished himself as a fearless, brave, and faithful soldier. He participated in the battles fought in the Red River country and at Port Hudson.

He was taken prisoner at one time by the rebels, from whom he afterward escaped by jumping into an almost impenetrable swamp infested with alligators and venomous reptiles. His captors gave him a parting salute of many guns, literally mowing down the flags and bushes around him.

He finally succeeded in reaching the Union lines nearly destitute of clothing, his body terribly lacerated and his feet torn and bleeding. He was afterward honorably discharged from the army, and at the time of his death was a member of Post Baxter, G. A. R., at Newport, Vt.

After his discharge from the army he returned to Vermont and commenced the practice of veterinary dentistry, scoring a pronounced success. Being a man of wonderful nerve and courage, he, in addition to dental skill, soon obtained a noted reputation for his ability in handling and managing vicious horses.

Finding the hills of Vermont narrowing his field of usefulness, he made his way to New York, and very soon commanded the patronage of the best horse-men in the city.

He rapidly obtained a reputation for the ease and certainty with which he subdued and governed horses that were given up as unmanageable.

His success with Mr. Robert Bonner's stallion, Edward Everett, was a notable instance. He had become savage and vicious to that degree that it was almost certain death for an ordinary man to enter his box. "House encountered him alone, and without any show of force, solely by the use of nerve and will power, subdued and controlled the savage animal." On his arrival in New York he was without friends or acquaintances, but he succeeded in a few short years in placing himself at the head of the veterinary profession in this country. His skill in manipulating about the mouth, and his perfect control of the animal, was something wonderful. In many of his specialties he had no equals in his profession. He was the inventor of many valuable and useful surgical instruments. Even the last days of his life were spent in designing and carving models for new and improved apparatus for surgical work. His career as a practitioner was short and brilliant, but it evinced genius of a high order. He matriculated in Columbia Veterinary College in the Fall of 1878, graduating in the class of 1880. He made many warm friends, and had many unpleasant enemies. His sickness was long and painful, though he frequently entertained hopes of ultimate recovery.

In the last days of his illness everything was done for his comfort that kind and sympathetic friends or skillful hands could accomplish.

The cause of death is stated to have been locomotor ataxia, complicated with chronic nephritis. He leaves a wife, one son and two daughters.

"TRIBUTE."

DANIEL F. LEAVITT, M. D., died in this city on Saturday, June 19th, 1883.

Dr. Leavitt was one of the Councillors of Columbia Veterinary College. He was interested and active in its organization and support, and did very much to advance the interests of the *Journal of Comparative Medicine* when it was first published. He was a wise counsellor, and a quiet, faithful friend.

Progress of Veterinary Science.

A CASE OF TRANSMISSION OF TUBERCLE FROM THE HUMAN SPECIES TO THE DOMESTIC CAT.—In the culture of medical science in these days of true and rapid discussions, the question of the transmission of tubercle from animals to man is proposed. I take the liberty to narrate a fact referable to a diametrically opposite problem, namely; the transmission of tubercle from man to animals. The case was that of a cat, two years of age, which died tuberculous after having repeatedly eaten the expectorated matter from a lady who died soon after of phthisis. On my first visit, by request of the owner of the cat, the animal presented a cadveric appearance, with a physiognomy of suffering and starry and lusterless hair. For some time previous it had been noticed that it had lost its natural beauty and vigor, lost appetite and suffered from severe cough and other symptoms which threatened a fatal termination. The cat died and I made a post mortem examination which verified my diagnosis. It was true tuberculosis. On opening the thoracic cavity I found white nodules of irregular form disseminated throughout the entire substance of both lungs, isolated or confluent and varying in size from millet seed to a grain of corn. I found some of these tubercles on the costal pleura, some on the pericardium, and, note the circumstance, only one of the size of a grain of wheat on the right side of the heart near the apex. I did not have time to examine these nodules microscopically. Examined thus superficially I found variation in their consistency, some hard and calcareous, others soft and containing pus. Will these data be sufficient to prove the cat tuberculous? I believe so.—G. BREZZO in *Il medico Veterinario, Torino*.

TUBERCULOSIS AND HYDROTHORAX IN A FEMALE RHINOCEROS.—“ ‘Mongol’ a female rhinoceros, about sixteen years of age, weighing about five thousand pounds, had been for the last thirteen years one of the attractions of Mr. P. T. Barnum’s show. Ever since she joined the show she had enjoyed apparently good health, and at the time of her arrival in New York on the morning of last Wednesday, seemed to be as well as usual. She was on the evening of that day fed as usual, and when on Thursday morning her cage was opened, she was found dead, lying in her natural position, and showing that she had died without a struggle. Her cadaver was brought to the American Veterinary College, when a *post-mortem* examination was made.

“An incision was made in the median line of the body from the chest to the pubes, and the skin, more than an inch thick, was dissected from the body. The abdominal cavity being opened and the contents removed, the following principal lesions were found: Near the stomach and between the cardiac and pyloric opening of that organ, was found a large, nodulated tumor, resting upon the small curvature of the stomach, tuberculous in character, and filling the entire space left between the two openings of that curvature. Spleen and the liver presented several nodulated tuberculous deposits much smaller than the first one. Near the quadrifurcation of abdominal aorta a number of tuberculous deposits were also found. The uterus is mammillated here and there on the body and the horns with tuberculous masses of the size of a walnut, situated in the cellular tissue between the muscular and mucous coat.

“All the organs of that cavity are healthy—the stomach, the intestines, the kidneys, the suprarenal capsule—with the exception of the small deposits already alluded to in the liver and spleen.

“On opening the thoracic cavity it was found to contain twenty-eight gallons of clear serous fluid, which had crowded the lungs into the upper portion of the chest, and the anterior lobes of both lungs were adherent to the thoracic walls by strong fibrous bands. The pleura presented a number of thickened spots containing tubercular deposits. The mediastinum was filled with

tuberculous masses, varying in size from that of a pea to that of a child's head. The lungs were dark, of a bluish color, slightly emphysematous at their lower border, and with their surfaces filled with miliary tubercles, very heavy and dense. Heart has both cavities empty and presented tuberculous granules on the tricuspid and semilunar valves. At the base of the heart, around the aorta and pulmonary artery, was found a large mass of tubercles. The pericardium is adherent to the pleura and to the lungs by fibrous bands, but is otherwise healthy. The pericardiac and cardiac lymphatic ganglions are enormously enlarged and indurated. On section they presented a circular wall of dense fibrous tissue, sending off shoots into the centre of the mass, and interlacing each other formed a kind of reticulum or stroma, with a dark greenish aspect in the meshes, containing tubercular deposits of various sizes. On the superior face of the sternum three large tubercles were found attached, and the axillary glands of both sides were very much enlarged, dense, of whitish color. The pectoral, prepectoral, and lymphatic glands of the neck were also much enlarged, indurated, and tuberculous in their character.

"Both of these affections were evidently of old standing, and readily accounted for the sudden death of the animal."—*Medical Record*.

SCARLATINA AMONG HORSES.—In Williams' work on Veterinary Medicine, republished by Wm. Wood & Co., 1879, an extended but somewhat confused account is given of equine scarlatina. In Fleming's "Animal Plagues," p. 482, we read: "In 1775 an inflammation of the pituitary membrane and catarrhal angina prevailed among horses and dogs, which were affected *before* mankind. * * * In 1776 an epizootic catarrh among horses succeeded the epidemic influenza of man in the spring."

Ibid, p. 446. A gangrenous sore throat prevailed in St. Domingo in 1772. The pharynx, œsophagus and trachea were covered with aphthæ in cows in France. In Russia and Wallachia, in an epizooty, the eyes were inflamed and projecting; the glands of the neck and even of the head were swollen, and in other cases the axillary or inguinal glands were involved. There was a discharge of pus from the nostrils. The disease was so contagious that if one was affected all others were seized in a very short space of time. Men, however, were not affected, though they handled the sick animals.

Ibid, p. 440. Gangrenous sore throat prevailed in Tartary in 1770, attacking men, horses, and cows. The disease showed itself, all at once, in the healthiest subjects of all ages and either sex. At first the skin became slightly reddened, then broke out into pimples, usually on the face of man and the flank and bellies of animals. It may have been small-pox, but was supposed to arise from the stings of venomous insects. Still the animals usually died, and the mortality was very great.

Ibid, p. 434. In 1770 a contagious epizooty appeared in France. It was apparently gangrene of the throat, but differed from the epidemic of 1762. The disease concentrated itself chiefly to the nasal cavities and upper parts of the respiratory passages. The eyes were suffused and the conjunctiva inflamed; the pharynx and nasal cavities also. The parts at the back of the mouth were highly inflamed, and yellow matter flowed from the nostrils, * * * and the nasal discharge became thin, fetid, and bloody.

Ibid, p. 425. "In 1767 scarlatina was very prevalent in France, and puerperal fever in Normandy. P. 426. In France the lower animals suffered equally with mankind. P. 427. So virulent was the contagion that, from the moment a horse was attacked in a stable, not only were the others quick in receiving it, but the infection lingered in it for many weeks afterwards, and was not slow in attacking horses brought there during this time, so that it was necessary to leave these stables empty for a long period in order to have them well aired and disinfected, and also whitewashed repeatedly, so obstinately would this malady leave traces of its fury and subtlety in the walls."

Ibid, 423. In 1764 a so-called aphthous disease affected horses, cattle, sheep and pigs. They had great heat in the head, and began to run from the eyes; the nose and mouth swelled, especially the palate; * * * saliva

flowed in great quantities, and when the disease assumed a serious aspect it choked them, or made them appear as if they had something in their throats, etc.

Ibid., p. 421. Aphthous fever and erysipelas appeared as epizootics, attacking horses as well as cattle. * * * The men who were affected by the disease experienced great difficulty, amounting to an impossibility sometimes, in swallowing, owing to inflammation and tumefaction in the back part of the throat. "Dr. Nicolau thought the disease arose in marshes, which in summer are crowded with flocks and herds, the putrid exhalations from which, engendered by the heat of the sun, gave rise to disease in animals, and putrid fevers among human beings." P. 418.

A. D. 1762. *Ibid.*, p. 415. An epidemic of gangrenous sore throat (*angina gangrenosa*) in France affected cattle, horses and mules, and was very destructive. Bougelat, the founder of the French veterinary schools, was sent to investigate it. He found painful swellings in the region of the lower jaw, and along the neck; discharge, from the nose; gangrene in the back part of the throat, pharynx and larynx, and in the cellular tissue enveloping or separating these parts; and in the cesophagus and trachea the membrane enveloping the base of the soft palate was black, livid, and covered with ulcers, which had gnawed away the base of the tongue. Is not this diphtheria?

The external tumefaction extended from the neck to all the inter maxillary glands, the neck and bronchiæ forming considerable external tumors.

P. 416. The throat was red, brown, and sometimes black.

The causes were drought, heat, bad herbage, and more particularly the extremely unhealthy, stagnant water the animals were compelled to drink. This disorder was contagious.—*Sanitarian*.

ANTHRAX IN THE HOG SOMEWHAT DIFFERENT FROM THE COMMON FORM.—

In the autumn of 1882 a fatal sickness attacked the swine of Betolle and other parts of Valdichiana, decimating entire herds.

The disease attacked by preference the young animals not sparing, however, the adult and older ones. It was considered contagious because as one became attacked several others of the herd met the same fate.

As to the symptoms of the disease the animal became depressed, lost appetite, and fever set in. Towards the end the patient maintained nearly always the recumbent position, the skin becoming reddened in those parts which lacked pigment, without, however, presenting any sign of eruption. Generally a period of erethism followed during which the animal jumped and shook itself. Death took place on the fourth or sixth day from the commencement of the attack.

Recovery was rare, the period of erethism not taking place in these cases, and the animal becoming lively, recovering appetite, etc. The diagnosis being uncertain from symptom alone, I made several post-mortem examinations, often accompanied by Francesco Marchi, V. S. The result of which I will not describe in detail but restrict myself to refer to the general characters.

In all the cases the prevailing characters were severe gastritis often accompanied by partial enteritis limited generally to the duodenum. The mucous membrane of the stomach was of a deep red color, swollen and softened, in the neighborhood of the pylorus, rarely near the cardiac orifice. The duodenal mucous membrane was in many places abundantly infiltrated with biliverdine. Evolution of gas took place in the stomach and intestines, (meteorism). In only one case I found gangrene of the gastric parietes. In some cases an intense unilateral pneumonia with hepatisation: in others the inflammatory action was confined to one lobe. The parenchyma of the lung presented a dark red color, black blood exuding on section, the surface of the wound having a granular appearance. In many cases the pericardium contained a small quantity of yellowish fluid in which white flakes were perceived. Sometimes the kidneys were found hypertrophied with their parenchyma softened.

The spleen was always in a normal state, not softened as usually takes place in anthrax. The liver often presented a physiological state, sometimes hypertrophied at other times full of black and uncoagulated blood. The blood was in some cases found in a normal, in others in an imperfect state of coagulation.

The fact that the spleen and often the liver were neither hypertrophied nor softened, the easy coagulation of the blood observed in many cases and the absence of some of the other anatomico-pathological characters peculiar to anthrax made me doubt this to be the disease under consideration; but before making a new diagnosis I wished to examine microscopically the blood of the animals in question. On doing so I found the characteristic germ, *Bacillus anthracis*. Repeated examinations always gave the same results.

As regards the therapeutic means prescribed, I found, besides scrupulous cleanliness of the stables, isolation of the sick, and the combustion or or deep burial of the carcasses, the sulphite of sodium to have a good effect, especially if given as a preventive. By these means I obtained through the assistance of Sig. Marchi, exemption from the disease of many pigs and even cure in many of the non-malignant cases.

N. PASSERINI, in *Gironale di Anat. Fisiol. Patol. degli animali*.—Pisa.

IMMUNITY OF ANIMALS FROM SYPHILITIC INOCULATION.—Professor Neumann has made a number of attempts to inoculate animals with syphilis, but without success. The experiments were made with the greatest care, the virus being taken directly from the diseased person and introduced into the body of the animal. The animals experimented upon were kept under observation for a considerable period of time after the inoculation. In no case did any results obtain other than those which would naturally follow the introduction of an irritating material into the tissues. Nothing that bore any resemblance to a chancreous tumor was observed. The animals employed in these experiments were three apes, three rabbits, a horse, a hare, a white rat, a marten, and a cat. The total number of inoculations was fifty-four. Neumann concludes from these experiments that we must regard syphilis as distinctly a disease of man.—*Med. Central-Zeitung*.

THE REPARATIVE PROCESS IN CARTILAGE.—Dr. Gies opened the knee-joint in young dogs under strict antiseptic precautions, and excised a piece of the articular cartilage, taking care not to wound the bone beneath. The operation was never followed by the slightest inflammatory reaction. After the animals were killed the wound in the cartilage was seen to be surrounded by an "atrophic zone," in which the cells were degenerated or had disappeared. Around this was a "proliferating zone," characterized by enlargement and segmentation of the cartilage cells and an increase in the number of nuclei. In no instance was there the least trace of a reparative process. Incised wounds of the cartilage, even after five months, showed no tendency to union. Here also, as in the case of actual loss of tissue, were seen the atrophic and hypertrophic zones parallel to the fissure. In a second series of experiments, the knife with which the cartilage was incised was previously dipped in a putrid infusion. The results now obtained were the same as those of other experimenters who operated without antiseptic precautions. Proliferations from the inflamed synovial membrane filled the wound in the cartilage with round and spindle cells. Presently cartilage cells appeared in the newly formed tissue, and in three months the wound was entirely filled with hyaline cartilage, so that scarcely any trace of the former injury could be discerned.—*Centralblatt für Chirurgie*.

TO SETTLE THE QUESTION whether or not it is possible for ova to travel across the peritoneal cavity or that of the uterus, Dr. Leopold, of Leipzig, has performed some important experiments. In these he made use of eight rabbits. In each case he opened the abdomen, tied the right Fallopian tube in two places and cut out the piece between the ligatures; the left ovary was carefully removed, then the abdominal wound was closed. After thorough

recovery each animal was put to the male. In six cases the result was entirely negative, but in two pregnancy followed. The abdomen of the latter was opened; in one, four placenta were found in the left horn of the uterus, and one in the right. He thinks these experiments settle the question. In these rabbits ova could not reach the uterus by travelling across the peritoneum from the right ovary to the left Fallopian tube; and only could get into the right horn of the uterus by passing down the left horn and up the right. They prove, therefore, that it is possible for ova to migrate, not only across the peritoneum, but across the uterine cavity.—*Weekly Medical Review*.

EXAMINATION OF A HIBERNATING SNAKE.—On the 14th day of February, 1883, one of my neighbors, while digging among some rocks near this place, suddenly came upon the winter quarters of a small "bull snake." The serpent was in a torpid state from the cold weather and was easily killed. During the afternoon of the 15th I happened to be at the place where it was killed, and procured it for examination. It measured $3\frac{1}{2}$ feet in length, and weighed 7 ounces. On opening the body, the stomach was found to be entirely empty; the bowels were almost empty, containing only a small amount of creamy looking substance in the lower bowel, streaked and tinged with something greenish resembling bile. Being a female, the parts answering to ovaries were large and congested, and each consisted of 26 distinct parts or divisions. The liver was very small and pale. The gall-bladder was large and full of bile, containing nearly half a fluid drachm. The lungs were fully inflated and extended on each side of the spinal column nearly the whole of the middle third of the body. The heart and arteries were nearly full of bright red blood. The spleen was 7 inches long, and weighed one-fourth of an ounce, which it will be seen was one twenty-eighth of the weight of the entire animal. It was of a dark red color and seemed to be rich in blood.

Is it probable that this enormous spleen serves as a reservoir of nourishment upon which the animal lives after its stock of adipose tissue is gone? The cavity of the body contained but very little fat, perhaps not more than 10 grains. Snakes at this altitude usually go into winter quarters about the 20th of October, and emerge from their winter homes about the last of April, or 15 days earlier if the weather be warm. This gives them a period of about six months in which they take no food. If not for the purpose of nourishing the body during this long fasting period, what can be the use of such an enormous spleen?—*Pacific Medical and Surgical Journal*.

CONSUMPTION AND TUBERCULOSIS.—In a lecture delivered before the East Berwickshire Agricultural Association, on Saturday week, Dr. Fleming remarked, that the disease called consumption in man, and tuberculosis in animals, was of the greatest possible moment to the whole world, because now known to be communicable, both by ingestion and cohabitation. If the milk and flesh of a consumptive animal were given to a healthy animal, they produce consumption in that animal. This question was assuming such importance that the European governments were taking active measures to ascertain everything regarding it. The pig, in its organization, was next to our own species, and they could produce consumption in that animal. Therefore the germs of tuberculosis possessed for them an immense interest and importance. If they could trace the origin of the disease producing tuberculosis in animals and consumption in human beings, then at once they had the key to its prevention, and they could stamp out the disease. He believed that our own government would have to include this disease, tuberculosis, under the Contagious Diseases (Animals) Act, and stamp it out. The dairies of our large towns fostered and spread the disease, one affected animal being sent to the butcher, and another in its place being put into the infected stall. Five per cent. of our dairy stock were infected with this disease of tuberculosis. The better bred cattle were, the more susceptible were they of tuberculosis. He was afraid the disease was on the increase, and until the fact was recognized that it was an infectious disease, they would be unable to check the malady, and the terrible scourge of the bovine and human species would remain and spread.

NEWS AND MISCELLANY.

PARASITES IN AMERICAN PORK.—From an investigation into the parasites in the pork supply of Montreal, Dr. Osler concludes: 1. That the hogs slaughtered for our markets present parasites in numbers sufficient to necessitate a more thorough inspection than is at present carried out. 2. As regards *trichina spiralis* which was found in the proportion of 1 to 250, he is of opinion that, considering the extreme rarity of cases of trichinosis, and the difficulties attendant upon a systematic inspection, a compulsory microscopic examination of the flesh of every hog killed is not at present called for. 3. In the case of "measles" the liver should be carefully examined, and, if present in it, the flesh of the animal should receive the special attention of the inspector; if only in the liver the entire carcass need not be confiscated. 4. Echinococcus cysts in the liver render that organ unfit for food, but in other parts, unless very numerous and disorganizing, they may be cut out, and the carcass remain marketable. 5. The public should be made aware of the possible dangers of eating, in any form, raw or partially cooked meat. The best safeguard against parasitic affections is not so much inspection of the flesh, unless, indeed, this is minutely carried out, as careful attention to culinary details. 6. To reduce the number of infected hogs greater attention should be paid to their hygienic surroundings, particularly in the matter of feeding. The danger is not during the period when the animals are penned and fed on grain, etc., but when they are allowed to roam at large and feed indiscriminately.

PRESENTATION.—On the occasion of the closing of active operations with the stamping out of the Pictou Cattle Disease in Nova Scotia, Professor McEachran, the Veterinary Inspector in charge, was the recipient of a testimonial in the shape of a handsome Nova Scotia gold chain, accompanied by the following address, which was presented by Mr. George Caswell, on behalf of himself and fellow officers: "To William McEachran, Esq., M. D., Veterinary Inspector, Pictou. Dear Sir—On the closing of the operations in connection with the stamping out of the disease among the cattle of this country for this season, we, the undersigned officers employed under you in the work, beg to ask your acceptance of the accompanying chain as a small token of our esteem and regard for you personally, and also as an expression of our appreciation of the efficient manner in which you have conducted the measure for the stamping out of the disease. We would also express our thanks to you for the many acts of kindness and consideration shown to us personally by advice and assistance in the carrying out of our various duties, and would further testify of the uniform kindness and consideration with which you have dealt with the farmers and others with whom, in the discharge of what were often unpleasant duties, you have had to deal. Wishing you a safe journey homeward and prosperity for the future, we beg to remain, yours sincerely, George Caswell, Joseph Grant, James Grant, John McQueen, Alexander Traser, Lauchlin McInnis, Peter McInnis."

Professor McEachran replied in suitable terms, thanking them for their handsome expression of good will. He said that while the active operations were for a time suspended, he thought that it was the intention of the Minister of Agriculture to recommend active operation early in the spring, and hoped that another season would see this country completely rid of the plague which threatened ruin to so many.—*Veterinary Journal*.

PROF. VIRCHOW'S HEALTH.—Our latest German exchanges announce a steady improvement in Prof. Virchow's health. He has been suffering for some time from an attack of acute nephritis, complicated by rheumatic neuralgia, and commencing with slight hemorrhage. He is now free from fever,

and the amount of albumen in his urine is steadily declining.—*Denver Medical Times*.

RED WATER IN CATTLE.—A. B. Allen writes to the *National Live Stock Journal* that red water is a very destructive disease to cattle in the Southern States, and thinks the best remedy is to keep the cattle free from injurious pastures and bad water. The *English Agricultural Gazette* says that if the disease is taken in time two ounces of spirits of turpentine, followed by two handfuls of salt, in buttermilk, have proved a sure cure. This is a simple remedy, and one that can do no harm even if it can do no good. Several English veterinary surgeons assert that sprinkling salt on pasture land has proved an effective remedy for red water.

ABNORMAL PERIODS OF GESTATION have been considered by naturalists and veterinarians who have given attention to these variations, rather as accidents than as an idiosyncrasy of individual habit or constitution. A considerable variation in the period may easily occur from physiological causes, as for instance the passage of the ovules through the fallopian tubes, which in the cow occupies four or five days. As fertilization cannot be completed until the ovule has been impregnated; this may be delayed as long as five days after the impregnation of the cow, by this movement of the ovule. Then for various reasons the birth may be delayed some time without injury, just as it may be prematurely hastened without injurious effect so long as the foetus is mature. Thus a birth may occur 60 days before the normal period, it may be delayed just as long after it, and as 283 to 286 days is the average period, the shortest time may be 223 days, and the longest 343. The extremes, as given by various observers, are as follows: 241 to 301 days, average 283, by 1,062 observations made at the agricultural school at Saulsie by Blaine, Tessier, Grille and Fürstenburg; 210 to 353 days by Dieterich, average 286 days; 240 to 330 days by Baumeister and Reuff, average 285 days; 220 to 313 days by 764 observations by Earl Spencer, average 284 to 285 days. The American Journal of the Medical Sciences give as the result of observations for some years on 62 cows, 213 days as the shortest period, and 336 days as the longest.

Every observer, except Earl Spencer, states that the average gestation of bull calves is longer than that of females, and all the experience of breeders tends the same way, the difference being about six days. But there has also been a difference observed in regard to breeds. Wilhelm states that the Hungarian cow carries her calf ten days longer than the Dutch cow; the Swiss Simmenthal breed has an average period of 280½ days; the English cattle observed by Earl Spencer had an average of four days longer than this. These differences are supposed to be due to the fact that a very vigorous, robust and hardy animal will have a longer period than another which is pampered and forced, and whose breeding and keeping are more artificial and refined.

The subject is one of much interest to breeders and physiologists, more especially in regard to its development in such breeds as the Jerseys, Guernseys and Short-Horns, where close line breeding and unusually high culture are practiced, and in which any idiosyncratic differences might be expected, if they were possible at all.

Very similar variations have been noted in the mare, ewe, sow, and the smaller domestic animals, but no case is mentioned in which the variation has had more than an accidental significance that could be reasonably explained.—*Country Gentleman*.

PROFESSOR ROBERTSON, principal of the Veterinary College in London has in preparation a work on Equine Medicine, which will be ready in the autumn. William R. Jenkins will be the American publisher of it.

PERSONAL.—Henry W. Rowland, D.V.S., a graduate of Columbia Veterinary College, has been appointed United States Veterinary inspector to watch cattle traffic between New York and New Jersey.

HORSES FOR FOOD.—During the last six months 3,085 horses have been used for food in Berlin. The warm sausages sold in the streets at night are mostly of equine origin. When a prominent restaurant keeper failed some years ago the most conspicuous among his creditors was a horse butcher, which throws a side light on the "roast beef" that used to be served up to his guests. The poor are the chief buyers, but there are not a few gourmands who look upon horse flesh as a delicacy.—*Horseshoer and Hardware Journal*.

AIR-SPACE IN COW-SHEDS.—The regulations of the Metropolitan Board of Works as to cow-sheds fix an "air-space" of 800 cubic feet per cow, no height of shed above sixteen feet to be reckoned in measuring the space. At a recent meeting of the Dairymen's Association it was decided to memorialize the Board to reduce the "air-space" to 600 cubic feet. We trust that the Board will refuse to accede to this memorial. Eight hundred cubic feet per cow, represents the result of careful inquiry, confirmed by observation, of the minimum air-space which should be given to each cow in a shed, if the health of the animal is to be fully maintained.

CRUELTY TO ANIMALS.—Officer Evans, of the S. P. C. A., is doing good work in preventing ill treatment of cattle on the Hudson River steamers. It appears that the owners, in order to obtain large prices for their cows, are in the habit of muzzling the calves during the voyage to prevent them from drawing the milk, the result being that the udders become "bagged" and "caked."

THE Honorary Degree of L.L.D., of Cambridge, is to be conferred on M. Pasteur.

MORE VETERINARIANS NEEDED.—In an address before the Kentucky Medical Society, at its recent session, the practice of veterinary surgery was commended to young men. The speaker estimated that the yearly loss arising from the want of sound advice and treatment—the horses of the country being valued at nearly eight hundred million dollars—amounts to \$15,000,000.

M. PASTEUR, the eminent microscopist and naturalist, to whose labors we owe most of our knowledge of the nature and behavior of the minute germs which produce various fatal disorders in animals, now receives from the French Government a pension of \$5,000 yearly, to enable him to devote himself to continued studies.

A MISNOMER EXPLAINED.—The meaning of hy-dro-pho-bia is a dread of water, *not a disease* susceptible of connection by any absurd construction from a diagnosis of the so-called disease of canine madness, which exists only in the imagination. All persons, as well as animals, dread water or any drink when under the influence of excessive fear, as a morbid inactivity of the organs of the throat prevails which tends to quackle or choke, and this tendency in the canine race, after they have taken cold in wounds that produce spasms, is proverbial. What has become of the mad dogs? In their absence let us calmly consider a few facts, and ask ourselves whether ignorance and superstition have not something to do with increasing their number and magnifying the dangers accompanying their malady. Dogs are sometimes afflicted with a distemper. When young they frequently have fits, running wild, with glaring eyes and frothing mouth; when old they have attacks of paralysis, and are reduced to a stupid, inactive condition, both of which have been called *rabies*. It is a common superstition, that should a dog go mad *after* biting a person, the latter will also fall a victim to rabies. Dogs suffering from wounds may take cold and inflammation setting in, the nerves become affected, spasms ensue, saliva is emitted, water is avoided, the whole appearance of the animal suggesting madness. The great disproportion of the sexes, occasioned by the destruction of the female dogs, has a capricious influence with various effects, including that of amateness and jealousy, often making them irritable to strangers and to snap and bite them seemingly without cause, or at the least trifling annoyance even from friends. Persons

taking cold in wounds have suffered in a precisely similar manner, with all the attendant manifestations of so-called rabies. The effect is the same as lockjaw, only that a wound from a rusty nail may, with inflammation from a cold, produce a stronger affection in the region of the throat. The end of many diseases which afflict humanity is attended with spasms, saliva, and other symptoms of hydrophobia. A few incidents will illustrate:

Some years ago a man in Dorchester, Mass., was bitten by a cat, another in Boston by a rat, and several by rabbits, the bites producing spasmodic symptoms in all the victims.

Mad horses and cows have been known, their disorder (frothing at the mouth, etc.) being doubtless caused by a poisonous shrub eaten with hay. A father bitten by his child, from whose throat he attempted to remove diphtheritic formation, died from the wound. A blacksmith of Roxbury, Mass., sprained his ankle while attending to a horse; he took cold, inflammation ensued, then violent spasms, and paroxysms at intervals for a week preceding death. The newspapers of 1878 reported that last March, in New York, Mr. J. Russell was bitten in the hand by Thomas Kelly, while quarrelling with him, since then his finger, then his hand, then his arm were successively amputated. He finally died from the effects of the bite.

A farmer of Ohio died from the effects of a bite on the hand from an insane son. Some members of a family were poisoned from eating roast goose, which they imagined was bitten by a mad dog, and were undoubtedly under spastic delusion. Had these animals and persons been bitten by dogs, they would undoubtedly have been reported as victims of rabies.

A man was bitten on the hand by a dog in Kingston, N. Y., and after three years was seized with symptoms which were at once regarded as those accompanying hydrophobia by all the city physicians, who watched the case with much interest. Between the interval of spasms the patient was rational and quiet, partook of water and food at times, but *usually* the *sight* or *sound* of *water* threw him into violent spasms. The man recovered, and the physicians regarded it as *hysteria* with hydrophobia simulation, which they thought was merely mental.

A dog-trainer of New York, whose intelligent experience was of long standing, did not believe such a disease as canine madness existed. He was bitten, and while suffering from the wound his attendants called the malady hydrophobia; it was in reality delirium tremens. Watts, of Boston, who has probably the greatest experience with dogs in the New England States, never yet discovered evidence of this so-called disease. It is true that cases have been reported in the medical journals, but generally with a protest from eminent authorities. One instance is that of a woman, whose malady was hastily set down by the physician as hydrophobia. He was deceived by a chronic case of hysterical fits.

What gives something of a quietus to this obsolete superstition is the fact of such innumerable cases of persons having been bitten all over the world by dogs with no serious consequences which could be cited if space would admit, wherein rabies have been pronounced as absolutely existing in the animal and patient, without any foundation or fact. A single instance, for the present, gives the fancied ideal of a volume, which is from a person holding office in the Society for the Prevention of Cruelty to Children and Animals, who witnessed an extreme case, called rabies, of a dog in paroxysms, frothing and biting fences and everything in his way, and finally biting a lady severely, aside from which she experienced no ill effects, and lived thirty years thereafter. Last autumn a lawyer, of New York, was ferociously bitten by a large dog while entering the premises guarded by the faithful animal at night. He took care that he took no cold in the wound, and therefore no harm came of it. A lady of Cambridge, Mass., bitten by a black and tan pet last winter, took similar precaution with like result.

Hunters and sportsmen who have been bitten by their own and other dogs repeatedly, under various conditions and circumstances, some attacks being mild, others ferocious and of a mysterious nature, attest that no positive evidence has yet been produced to show that virus ever emanated from a canine's mouth.

The writer during his life has been surrounded by different species of dogs; his children and friends, as well as himself have often been bitten by them, sometimes severely; but by the exercise of every precaution against taking cold, no ill results have followed. If a wound be severe, first cauterize it, if possible; however this may be, the application of a poultice of flaxseed and slippery elm, saturated with laudanum, will remove all irritation. Many practitioners of Paris have for a long time doubted the existence of hydrophobia as a disease, and those of eminence, experience and deep research of Europe and America, regard it now as fallacious; while observation, experience, and an intelligent domiciliary view by others, who have studied the subject-matter, see no reason why this phantom should be a synonym of hydrophobia, with any more sense, than to substitute hallucination for reality.

J. G. CLAPP.

[Our correspondent's statements are interesting, but they simply show that hydrophobia is a rare disease (which is well known,) and that many bites are harmless or only cause a non-specific tetanus.—ED.]—*Medical Record*.

VETERINARY HOSPITAL.—The project in question has been handled in a practical way by the corporation of Harvard University, which has founded a school of veterinary medicine, and created, or has in process of preparation, a general establishment for the treatment of horses, cattle, sheep and dogs. This is to consist of a hospital in the city proper, and farm accommodations some four or five miles out, but still within the limits of the city. The hospital building, which is now in course of erection, is located at the junction of Village and Lucas Streets. It is to be constructed of brick with stone trimmings; will be 50 x 50 feet in area and three stories high, with a light, airy basement underneath. The entrance to the basement will be from Lucas Street, and down an incline. Here will be located the forge room, the stalls and other accommodations for cattle, sheep, etc., and for the boiler and other steam heating apparatus and machinery to run the elevator. On third floor will be a large quadrangular space, surrounded by the stalls for horses, etc. This is to be the lecture room. There are, also, one padded stall for violent cases, four large box stalls and six ordinary stalls. On the second floor, which is reached by an incline from the first, as well as by the elevator, there are four box stalls and five extra wide stalls, a large room for dogs, a pharmacy or drug room, and apartments for attendants. The third story will contain work-rooms, harness room, hay and grain loft, and a bedroom for the house surgeon. The elevator is to be of a capacity to take up the largest animal treated, and will be used in taking up the ailing horses, etc., brought for treatment. The building is to be heated with steam, and will have water on every floor. It will be thoroughly ventilated, and being constructed specially for the use to which it is dedicated, will contain every convenience and appliance which experience in older countries in similar lines of treatment have suggested. The stalls are of hard pine and iron, and will be constructed after the most approved models. There will be accommodations for ten horses at a time, and space for a few cows and other animals; the room for dogs is to be properly fitted up with all the modern improvements for the cure of the sick bow-wows. The patients in the hospital will be under the professional charge of Dr. Charles P. Lyman, fellow of the Royal College of Veterinary Surgeons of London, England, and professor of veterinary at Harvard University. In addition to the hospital just described, the hospital management will have at its disposal a large farm, with comfortable accommodations and stone buildings at West Roxbury, near the Forest Hill station of the Boston and Providence railroad, where cattle can be received and cared for, and where horses not required for present use, or that may be suffering from lameness, or illness requiring long treatment of rest, can be sent, and where they will be sure of receiving proper care and treatment. Here they can also have the benefit of grass paddock or pasture in the summer season, and of a warm, comfortable straw yard in the winter.

ILLINOIS STATE VETERINARY CONVENTION.—A large number of veterinary surgeons assembled in Chicago, May 22d, with the object of forming the "Illinois State Veterinary Medical Association." The Committee on Constitution and By-laws reported a preamble, which was adopted as a whole. It called attention to the fact, that the practice of veterinary medicine and surgery stands in close alliance with the practice of human medicine in point of importance and necessity; that the general public recognize this, and are more inclined to accord to veterinarians their proper position, socially and professionally; that the association of professional brethren exerts a powerful influence in promoting friendship and unity, breaking down the barriers of formality and personal jealousies, and at the same time providing ways and means for the discussion of topics of mutual interest, and in consideration of these and other reasons, resolved to form a mutual benefit and protective association, to be known as "The Illinois State Veterinary Medical Association." The constitution was then read, and the Convention elected the following officers:

President—A. H. Baker, of Chicago.

1st Vice-President—Wm. Sheppard, of Ottawa.

2d Vice-President—I. J. Miles, of Chicago.

3d Vice-President—J. D. Tuthill, of Charlston.

Recording Secretary—Joseph Hughes, of Chicago.

Corresponding Secretary—John F. Ryan, of Chicago.

Treasurer—W. L. Williams, of Bloomington.

Board of Censors—Wm. Sheppard, of Ottawa; R. J. Withers, of Chicago; N. H. Paaren, of Chicago.

The By-laws were adopted, and, together with the Constitution, signed by all the members present. The Convention was then declared at an end, and the "Illinois State Veterinary Medical Association" was called to order by President Baker. Communications were then read from Prof. Bates of Columbia College, Prof. McEachran of Montreal, Prof. Liautard of New York, Prof. Smith of Toronto, Prof. Lyman of Harvard College, Prof. Jennings of Detroit, D. P. Frame of Burlington, and several others, regretting their inability to be present, and extending their best wishes for the success of the movement, and congratulations on the formation of the Society.

The Chairman then nominated Drs. Sheppard, Hale and Withers a committee to draft a bill to be presented to the Legislature for their action.

Dr. William Sheppard, of Ottawa, read a paper entitled "Lameness in Horses," receiving a vote of thanks.

Dr. Withers then highly complimented the manager and editor of the *U. S. Veterinary Journal* on the successful issue to which, through its medium, the Convention had been brought.

THE DEGREE OF DOCTOR OF LAWS.—The members of the veterinary profession will be pleased to learn that, by resolution of the *Senatus Academicus* of the University of Glasgow, his native city, the degree of LL.D. was conferred on Mr. George Fleming, Army Veterinary Inspector, at the graduation there on April 27th, in recognition of the services he has rendered to medical and veterinary science, and particularly to comparative pathology and sanitary science. We believe this is the first time that a university has acknowledged the claims of veterinary science to the highest honor the Senate can confer.—*Veterinary Journal*.

PRESENTATION.—Mr. George Fleming, President of the Royal College of Veterinary Surgeons, has lately been the recipient of a testimonial, subscribed for by members in every part of the world. In reply to the address of Mr. Greaves on behalf of the profession, Mr. Fleming said that the object of his life had been to promote the instruction, elevation and welfare of the profession. From his early days he had been deeply impressed with the necessity of promoting veterinary science in England and all English speaking countries, and procuring for the profession a social station hitherto denied it. He felt now that they recognized that he had done his duty in that direction. The subscriptions amounted to over £450, and was spent in having two por-

traits of Mr. Fleming painted, one for himself and the other for the Royal College of Veterinary Surgeons, and in the purchase of the presents, which consisted of two pieces of silver plate and a diamond ring.

GLANDERS has appeared among the horses of Whiteside and Perry counties in Illinois, and two persons, father and son, have died, having become inoculated with the poison while caring for their sick horses. Strict measures have been taken by the authorities to prevent a spread of the disease, a number of the animals having been shot and others quarantined, and it is believed that the disease is now entirely under control.—*Weekly Medical Review*.

THE TREATMENT OF IMPORTED CATTLE.—The Secretary of the Treasury has issued a circular to customs officers promulgating regulations governing the treatment and quarantine of imported cattle as follows: All cattle arriving in the United States from Europe, Asia, Africa, Australia or New Zealand shall be subjected to a quarantine of ninety days, counting from the date of shipment. It shall be the duty of the veterinary inspector at each port to see that the cattle imported shall be securely guarded against the risk of transmitting or receiving contagion until they shall have entered the quarantine grounds, and all imported cattle shall be under his control from the time of landing until they reach the quarantine grounds. He shall also be superintendent of the quarantine, and shall have charge of the grounds, buildings, yards, and all property thereto belonging.

DR. L. ROTH, of Kissengen, reports a violent outbreak of diphtheria among a barnyard of fowls, which he attributes to infection from children, some of the poison being mixed with the sweepings of the room and thrown into the yard. The *Med. Press*, March 21, 1883, says: "Such an observation as this is very interesting, and seems to bear out some of the statements of Herr M. Wolff in a paper 'On a Widespread Brute Mycosis.' In it he drew attention to the infectious diseases of domestic animals, which clinically and anatomically run a course exactly similar to those of human beings. He mentioned the fact that anthrax was met with in fowls, geese and ducks, and caused the same phenomena as when its habitat was the mammalia. He also mentioned another devastating mycosis prevalent amongst domestic birds that bore a complete analogy to diphtheria (*vide* Dr. Roth's observation). Yellow and white-yellow membranes were developed upon the most diverse mucous membranes, having all the characteristics of human diphtheria, so that it could not be removed without causing bleeding. A third disease that had its analogue in man was ulcerative endocarditis, that runs its course with the same valvular changes and multiple emboli in the various organs as in man."—*Weekly Medical Review*.

VACCINATION.—M. Peters, a member of the Academy of Paris, has declared before that learned body that animal vaccination by the Pasteur method is an uncertain, useless and dangerous proceeding. There is a veterinary department at the Berlin Hygienic Exhibition which shows in a thorough manner various methods of treating animals when vicious or in pain. There is a complete line of horse-shoes, from the most ancient days known to the present time, and an exhibition of calculi found in the large intestines of horses which would certainly excite much interest in the minds of our skilful surgeons. The largest is the size of a man's head.

COPPERHEAD VENOM.—Dr. I. Ott (*Virginia Medical Monthly*, February, 1883), comes to the following conclusions:

- "1. The venom of the copperhead is weaker in toxic activity than that of the rattlesnake.
- "2. The heart, with both kinds of venom, becomes greatly prostrated, and in rapid deaths is their main cause.
- "3. The venom of either snake does not affect the sensory nerves.

- " 4. The sensory nerves are affected by both venoms.
- " 5. The muscular excitability continues to be little affected at the time of death by the poison of the copperhead.
- " 6. The two venoms greatly resemble each other in physiological activity.
- " 7. The cardiac force, rhythm, and frequency are lowered by both venoms.
- " 8. The arterial tension is greatly lowered by both venoms.
- " 9. The blood, after copperhead poisoning, shows no microscopic changes of its globules, and no difference in its spectrum."

ARE THERE INSANE ELEPHANTS?—To the zoölogist this question seems absurd, but the existence of insanity among elephants has been denied by the dilettante alienists of the London *Lancet*, who are often remarkable for their misinformation on human psychiatry and histology, and can scarcely be expected to have a speaking acquaintance with certain primary facts in comparative psychiatry. The insane elephant is so common in countries where the elephant exists as to be designated by a popular name. He is called a "rogue." In the case reported by Dr. Todd, of St. Louis, in this Journal, January, 1881, p. 61, the autopsy on an elephant who suddenly became violent and destructive, having been always well behaved, revealed marked meningeal and encephalitic congestion. What were the changes found in the case of the elephant Pilot, recently slaughtered by Barnum because of insanity, are not yet known, but he was decided insane. The *Lancet* seems to need a good instructor in histology and psychiatry very much.

TRICHINÆ.—Mr. Frank S. Billings, veterinary surgeon, contributes two valuable articles to the New York *Medical Journal* upon "Trichiniasis in its relations to the Public Health and National Economy." His method is to take a stump of the pillars of the diaphragm and examine their sections. Of the 8,773 hogs examined 345 were found infected, that is one in every twenty-five. This result, says Mr. Billings, does not certainly support the words of the State Department, that there are "less trichinæ in American pork than that of any other country. Comments are made upon the manner in which some investigations have been made. In one case an objective capable of magnifying two hundred diameters was used, and the pieces examined were separated into shreds. Mr. Billings very pertinently remarks that as the length of the female trichina is one-eighth of an inch, he should expect, when he did happen to find one, to find a boa-constrictor. In the second place, it is well known that the parasite is most easily recognized by using crushed specimens. In conclusion, he says:

"Some unknown living thing lodges trichinæ before they enter the porcine organism. The questions are: What is it? Where is it? What are its modes of life? These things discovered, and they must be, an end can be put to porcine trichiniasis, and hence to human. Bluffing the attempt to write down an existing fact will only end in ridicule to this government; re-

search, untiring and unceasing, is the only 'cure'; cost what it will, it will pay far better than government lies. American hogs are much more trichinosis than European."—*San Francisco Western Lancet*.

CEREBRAL CONGESTION.—A grey c. b. gelding, 11 years old, while under treatment for a contused wound of elbow, caused by a kick, was found with his head over the box wall, sweating profusely with 80 respirations per minute, heard at a considerable distance, anxious expression and struggling for breath. While being observed he sank down with his head resting on his knees, but standing upright on his hind limbs—an unusual position for a horse. After a few moments he dropped into a heap in a corner and remained quiet, except when efforts were made to apply remedies, which, from the danger involved, were finally abandoned, dying in the evening of the day following.

Autopsy revealed broken down kidneys, structure, melanotic tumor over right external iliac vein, rupture of spleen closed by a plug of fibrin, lungs congested, partly gangrenous, and their vessels filled with thrombi, heart cavities and vessels arising from them for some distance filled with clots, brain congested, membranes ecchymosed and depressed fracture of frontal bone. Cause of death, thrombosis.

The case is of interest from the fact that the loud breathing caused by pressure of throat against the wall was a misleading symptom, in the remarkable attitude and in the proof that a rent spleen is not immediately fatal.

CEREBRAL TUMOR.—An eight-year-old bay gelding was observed one morning to be off feed and dull, with staggering gait, slow and full pulse, injected mucous membranes, depressed head, tympanic abdomen, and incontinence of urine. These symptoms improved under treatment and the patient continued to improve until the evening of the third day, when the following symptoms developed themselves: Head enormously enlarged, eyes closed, nostrils obliterated by effusion, temperature 105°, slow and stertorous breathing, cold sweat, continuous spasmodic movement of lower jaw and near hind extremity and swaying to and fro of body. The movement of jaw and leg did not cease until death, which took place on the fourth day.

Autopsy.—Abdomen healthy; cerebrum covered with blood; veins congested and enlarged; arteries empty, but no clots; "mother of pearl" like tumor in lateral ventricle composed of cholesterine and fatty matter.

The case is of interest from the remission of the symptoms and the continuous movement of hind limb and lower jaw.—*Quarterly Journal of Veterinary Science in India*.

THERE was recently exhibited at West Philadelphia a very simple method, and an improvement upon the Barry system of training horses, and the manner in which some of the wildest horses were subdued was astonishing. The first trial was that of a kicking or "balking" mare, which her owners said had allowed no rider on her back for a period of at least five years. She became tame in about as many minutes and allowed herself to be ridden about without a sign of her former wildness. The means by which the result was accomplished was a piece of light rope, which was passed around the front jaw of the mare just above the upper teeth, crossed in her mouth, thence secured back of her neck. It was claimed that no horse will kick or jump when thus secured, and that a horse after receiving the treatment a few times will abandon his vicious ways forever. A very simple method was shown by which a kicking horse could be shod. It consisted in connecting the animal's head and tail by means of a rope fastened to the tail and then to the bit, and then drawn tightly enough to incline his head to one side. This, it is claimed, makes it absolutely impossible for a horse to kick on the side of the rope. At the same exhibition a horse, which for many years had to be bound to the ground to be shod, suffered the blacksmith to operate on him without attempting to kick while secured in the manner described.—*Chicago Tribune*.

THE JOURNAL

OF

COMPARATIVE MEDICINE AND SURGERY.

VOL. IV.

OCTOBER, 1883.

No. 4.

ORIGINAL COMMUNICATIONS.

ART. XXIV.—THE UNITED STATES GOVERNMENT IN ITS RELATION TO CONTAGIOUS ANIMAL DISEASES AND THE VETERINARY PROFESSION.

BY FRANK S. BILLINGS, V. S.

IN opening these questions we are obliged to look upon them from a political standpoint only. True politics is nothing else than the Science of Government. We see very little of this in the United States. If a stranger were to be asked what is the purpose of our Government, he could truly say, "to provide support for a lot of hungry politicians and still more for a whole army of their fellows, or minions." The ideal aim of a true representative government; "a government of the people, by the people and for the people" scarcely ever enters, and still more seldom fills, the brain of the average American politician. Science scarcely finds any support in this country either from the central or State Governments. Medical Science absolutely none. Scientific work in this country is simply the

result of the sporadic endeavors of individuals; never of Government support as in Continental countries. The reason for this is to be sought in the total unfitness of the average American representative for the position he is elected to occupy. It is a purely American idiosyncrasy to suppose that men of general worldly ability and success have either the general or special education to enable them to legislate logically upon technical questions. Bigoted and unreflecting adherence to party principles without regard to independence of mind and faithfulness to national interests are the standard requisites sought in an American politician. Our Congressmen fail in comprehending that their work is of a national and not local character. What their local party constituency think should be a matter of little importance.

We see this unfitness of our Congressmen fitly illustrated in their deportment to the National Board of Health. Not one in fifty of them have general education and breadth of mind enough to comprehend the work that should be required of such a body. We see it again exemplified in their deportment with reference to matters strictly veterinary in their nature. We have before our eyes the farce of two Veterinary Powers in connection with the Government; one as a Treasury Cattle Commission, the other as a Veterinarian attached to the Agricultural Department. Nothing but jealousy between the departments, corresponding to that between the Board of Health and the Army Hospital Service, must be the natural result. The utter incompetency of the heads of these two departments with reference to the work of such Veterinary Powers, is shown by the work they are trying to do. The Government gives its support to quackery and empiricism and general incompetency by appointing on its Treasury Cattle Commission a non-educated, non-graduated empiric. No Government has a right to do this. The duty of a Government is to support the highest and best, and there are plenty of graduated and educated men in the country from whom a proper selection could be made. Further, the work of the commission is narrowed down to such contagious animal diseases, and none others, as have attracted the attention of Foreign Governments with reference to exported animals,

chiefly cattle ; our domestic interests are of little account either to the Government or the Commission. No attempt is made to increase our knowledge with reference to the prevalence of disease in general and contagio-infectious disease in special among our domestic animals. The veterinary profession of the country is utterly neglected, and no demand has ever been made upon it, to report to the Government the results of each year's practical experience among our animals. The Veterinarians who have thus far been so fortunate, or unfortunate, as to receive Government appointments, state or central, have all shown but one desire ; viz.: to make themselves very prominent, and to make no use of the profession, save in such cases as they could find mere minions, or mouthpieces among its members. One government Veterinarian was so incompetent and so afraid some one would "steal his thunder" that he took an M. D. with him to Europe to make autopsies which he was unable to perform. This amounted to the same thing as telling the country, in his official capacity, that there was no Veterinarian in the country fitted to do such work. Some could be easily found, however, capable of instructing this Government Veterinarian and his medical assistant in this branch of work.

There is no more need of a Treasury Cattle Commission and an Agricultural Department Veterinarian than there is for a cow to have five legs ; one is superfluous. This Agricultural Veterinarian is supposed to repeat the work of Pasteur, Koch and others, in Europe. This is Yankee effrontery. With the laboratories and means at their command it is absolute folly for us to try to do anything in the same line, until we can supply men with the same. What we need to do first, is to really know what diseases we have here ? How much they are extended ? What are the climatic, telluric, transport and other influences which play a part in their generation and extension. What we want at Washington is not only a man, or men, as Veterinarians, of education, but having a genius for the organization and planning of work of the very highest order ; a man who can not only work himself, but has that rare ability to make work for others and get it out of them, without letting himself be too prominent. No man can tell, and the present

Government Veterinarians are not trying to find out the extent to which glanders has extended among our horses; yet it is surely greater than the lung-plague among our cattle. We do not know anything about the extent of anthrax (or anthracoid diseases) among our animals; yet we read of "new diseases" continually appearing, which ignorance fails to recognize, but one as old as the history of man. Have we no Scab among our sheep? What extent does parasitic mange have among our dogs? How many cases of true Rabies take place in a year, and what is the damage caused by rabid dogs as well as non-rabid dogs among our sheep? To what extent does Tuberculosis prevail among our cattle?

The cowardice, prevarication, and incompetency of our Government is, however, better shown by its deportment toward the Trichinæ question than any other. To be sure we did all we could about Pleuro-pneumonia; first we had next to none at all, then a very few cases, and finally had to admit we had considerable; some ten or fifteen million dollars worth that is all. Then some one had the audacity to assert we had Trichinæ in our pork. Was ever anything so absurd! "There is no Trichinæ in American pork," says a Government circular sent to Foreign Governments, which assertion was known to be a lie and proven to be such.

Clause 8 and 9 of this wonderful Government circular read as follows:

8. "That the percentage of American hogs infected with trichinæ is, *in all probability, by reason of the superiority of the breed, and feeding, much less than that among the hogs of any other country.*"

(a) When a government through any of its departments makes a statement with reference to any question of so grave importance as *trichinæ* in our pork, it should have some stronger grounds than a "*probability*" upon which to support its assertions.

There are no records of the Government ever having authorized any examination of American hogs for trichinæ.

(b) Who ever heard of the *breed* of hogs having any influence upon trichinæ-infection? Who was the learned informant of our Government in this matter?

Superiority of feeding, so far as grain is concerned, has but little influence upon trichinæ-infection, if any at all, so long as hogs are allowed to root in refuse or run at large.

Such assertions can not be justifiably made until we know the *original source from which hogs derive trichinæ*.

With reference to "corn-feeding," Dr. Jansen T. Payne * makes some assertions which are of interest, but equally ridiculous with the foregoing, and show very little study of the trichinæ question. He says, of the hogs he examined at New Orleans: "All the hogs infected with trichinæ ARE CORN-FED ANIMALS; no mast-fed animals were found to be infected," which is as much as saying *that corn-feeding is a cause of trichiniasis*—an assertion, as an investigator, I should be ashamed to have to father. Wild hogs that are not corn-fed have been found infected with trichinæ.

9. "That freedom from trichiniasis of the *two great pork-consuming centers of the West, Chicago and Cincinnati*, furnishes the *strongest possible evidence* of the purity of American pork. In Chicago, of 40,000 deaths, with causes reported, for a series of years, *only two* were from trichiniasis. During the same time *NONE* were reported in Cincinnati."

(c) Does the author mean that the people of these two cities consume more pork than those of New York, or the packing-houses?

(d) The consumption of pork as food bears no relation whatever to the number of cases of trichiniasis among people. One might almost be justified in saying *that the consumption of known trichinous pork did not*.

The way it is eaten does, however. Well cooked or not, that is the question.

Clause 10 indorses the last assertion:

"The reported cases of trichiniasis among human beings have resulted from eating uncooked pork," etc.

Hundreds of cases of trichinous infection are either so slight as to escape the attention of the doctors, or do not cause inconvenience enough to necessitate calling a doctor, or, as will be shown, if severe, are mistaken for something else. The tone of the government argument is false from the bottom; as

* Ninth Annual Meeting of American Public Health Association.

to eating *uncooked pork*, many slurs are made at our German citizens in this regard, while we, of English descent, fail to see that carnivorousness and its results are common to all people; the German indulges in raw, spiced, or smoked pork, and from it derives trichiniasis; the American eats raw or uncooked beef, and derives a tape-worm. Comment is unnecessary, the only difference being, the German runs a greater risk of being sick or losing his life; the act is the same.

The following examination of American Hogs was made by me and had been published in the Massachusetts Board of Health Reports long before the government circular was written:

In making these examinations, a stump of the pillars of the diaphragm was invariably used, each piece representing one hog. But three microscopic specimens were made from each piece—a rule I invariably adhere to; hence, if there is any error in my figures, it is in favor of the hogs.

1879.

LOT.	Number examined.	Non- trichinous.	Trichi- nous.	LOT.	Number examined.	Non- trichinous.	Trichi- nous.
1	47	44	3	12	300	275	25
2	48	46	2	13	201	188	13
3	72	62	10	14	192	187	5
4	60	56	4	15	200	184	16
5	226	210	16	16	257	252	5
6	192	179	13	17	238	225	13
7	100	96	4	18	163	154	9
8	81	80	1	19	26	25	1
9	95	94	1	20	12	11	1
10	93	89	4				
11	98	90	8		2,701	2,547	154

Proportion, 1 : 17.154.

From the same source as the above :

1881.

LOT.	Number examined.	Non- trichinous.	Trichi- nous.	LOT.	Number examined.	Non- trichinous.	Trichi- nous.
1	127	120	7	10	125	118	7
2	130	127	3	11	127	122	5
3	153	150	3	12	122	118	4
4	120	115	5	13	124	118	6
5	124	123	1	14	100	100	0
6	100	99	1	15	122	115	7
7	119	113	6	16	120	114	6
8	127	123	4				
9	160	152	8		2,000	1,929	71

Proportion, 1 : 28.

From another source :

LOT.	Number examined.	Non- trichinous.	Trichi- nous.	LOT.	Number examined.	Non- trichinous.	Trichi- nous.
1	129	120	9	11	93	93	0
2	130	123	7	12	128	125	3
3	140	130	10	13	112	110	2
4	105	102	3	14	124	120	4
5	73	71	2	15	81	80	1
6	130	125	5	16	84	80	4
7	119	115	4	17	120	117	3
8	127	120	7	18	59	57	2
9	132	130	2				
10	182	175	7		2,068	1,993	75

Proportion, 1 : 27.

From a third source :

LOT.	Number examined.	Non- trichinous.	Trichi- nous.	LOT.	Number examined.	Non- trichinous.	Trichi- nous.
1	105	105	0	13	121	121	0
2	45	45	0	14	103	100	3
3	65	64	1	15	76	75	1
4	80	78	2	16	102	100	2
5	61	60	1	17	130	124	6
6	63	60	3	18	130	125	5
7	96	92	4	19	131	128	3
8	100	99	1	20	122	120	2
9	100	99	1	21	85	84	1
10	98	96	2		2,004	1,959	45
11	90	86	4				
12	101	98	3				

Proportion, 1 : 44.

RÉSUMÉ.

	No. of hogs examined.	Trichinous.	Per cent. of infection.
1879.....	2,701	154	1:17
1881, First source.....	2,000	71	1:28
1881, Second source.....	2,068	75	1:27
1881, Third source.....	2,004	45	1:44
Total.....	8,773	345	1:25

These figures certainly do not serve to support the words of the State Department, that there are "*less trichine in American pork than that of any other country.*" They do speak in no uncertain terms, that our Government has an imperative duty which it owes a large national interest, until the original source whence swine become invaded be discovered.

It has been said already that but about fifty of these 8,773 hogs were bought at Chicago; hence, were Western hogs, though killed and examined at Boston. They were purchased at the same yards from which the Chicago packing-houses obtain the pork which our State Department declared to be so "*free from trichine.*"

Further, the percentage of infection of the hogs from the three different sources is interesting, but not easy of explanation, but no more varying than that of those examined in 1879 and 1881 from the same source.

This variation in the per cent. of infection between those examined in 1879 and 1881 called forth the following remarks from Dr. Loring, the present Commissioner of Agriculture :

"A veterinarian of New England informed me on the 14th of April last that he had examined portions from 2,701 Western hogs, obtained in Boston, 154 of which he found infected, i. e., one case to each 17½ hogs examined. He tells me that he will make a statement to this meeting that he has examined portions of 8,773 Western animals, and has found one case to every 25 animals. *You will see that there is a great difference between his first (April) examination and this one, and his result is so greatly different from the English examination of our hogs, above mentioned, and so much above any known percentage among animals of every other country, that I cannot but entertain doubts of the value of his examination.*"*

The English examination spoken of reads as follows :

"*The inspectors of the Veterinary Department examined two hundred and seventy-nine separate portions of swine's flesh, which were sent from Liverpool, and detected living trichinæ in three specimens*" (1:93).

Were Dr. Loring anything but a physician, such criticism as the foregoing might be passed as unworthy of notice, but from a physician, who should have some knowledge of the variation of medical statistics, we should expect some other argument than *empty words*.

First, as to the discrepancy spoken of between the results of my examinations, made about a year apart: it is not greater than that between any two lots taken at random in the same examination, nor so great as between very many lots examined on two consecutive days; as, for instance, in my series of 1881, Lot 14 (source the same as in 1879) was 100 pieces, of which NONE were infected, while of Lot 13, 124 pieces, *six were trichinous*.

In two different epidemics of small-pox, the number of

* See letter to Health Congress, previously referred to.

deaths is never the same, or even the number of cases. Are we then to say a later invasion is not small-pox, because the number of cases or deaths is less or more than in a previous? I never for a moment expected similar results, and should have been as pleased to find none as any one in the country.

With reference to the English examination, 1:93, *it is greater by far than the percentage of infection found in the hogs of any other country, and greater than I found in some lots examined by me; for instance, Lots 1, 2, 3, 4 of my third series, 1881, contained, respectively, 105, 45, 65, and 80 specimens, representing 295 hogs, of which three were trichinous, 1:98.* Further, we do not know the parts the English examined; had they been pillars of the diaphragm, the per cent. might have been greater.

As to the *correctness* of my results, I will simply say that Dr. Folsom, of the Massachusetts Board of Health, went over a large part of those examined of 1879, and that competent physicians and a gentleman whom I educated to work with me, whom I can call upon for testimony, continually revised my other specimens as I examined them.

Again, if the Commissioner of Agriculture doubts my results, let him send a competent man or men here and examine with me the same specimens, be it one or ten thousand, and I venture to say we shall find a percentage of infection *larger than that reported in any other country, and large enough to satisfy any one.*

Further, the Germans, well doubt the figures of their own examinations, as, from the Prussian statistics, we see the percentage of infection is steadily augmenting.

I wish now to refer to the report of Dr. Jansen T. Payne,* which I have before alluded to, from which I quote the following:

"The method of conducting the researches was as follows: 'The examples procured one afternoon were examined the following day by the aid of a good microscope, capable of magnifying objects *two hundred diameters.* A low power was found to give greater satisfaction than a higher one could have done, and observers in this field would do well to bear this in mind. When it is taken into account that each of the specimens had to be separated

* Report of the American Public Health Association, 1881.

into minute shreds before they were placed upon the stage of the microscope, and consider the number of fibres examined in such cases' " (he examined in all 21,600 specimens from 5,400 hogs), "it will readily be perceived that it is impossible to make anything like an accurate guess as to the whole number of pieces of muscle-fibre examined.

Result: Number examined, 5,400; trichinous, 22.

"By this series of examinations, it has been ascertained that Southern-bred hogs are free from trichinæ."

If there is anything I dislike to do, it is to criticise the work of another observer; but one would like to know if *two hundred diameters* is considered a low power. For myself, when looking for trichinæ, should I use such a power, I should not expect to find many trichinæ, but boa-constrictors; in fact many would escape me. The male trichina measures one eighth of an inch in length—magnified two hundred diameters, what would one have?

Again dividing specimens into shreds may be highly technical, but eminently unpractical; for with crush-specimens one can easily recognize the parasite, and it is done quickly, while in this way, and such a high power as two hundred diameters, one would be sure to miss many.

I doubt the statement that "*Southern hogs are free from trichinæ*" as much as I do that "*corn-feeding*" has anything to do with trichiniasis.

My observations have been made, but not of Massachusetts hogs, at Boston, which is not the place for such work, except so far as the obtaining of the per cent. of infection of hogs which have come directly from the breeder or fatterer to the packer. Individual lots could be examined, and traced back to the source whence they came. If found highly infected, it would be easy to go to such places and make all manner of examinations—of remaining hogs, the earth, worms, grubs, etc. *Some unknown living thing lodges trichinæ before they enter the porcine organism.* The questions are: *What is it? Where is it? What are its modes of life?*

Bluffing the attempt to write down an existing fact will only end in ridicule to this Government; *research*, untiring and unceasing, is the only "*cure*;" cost what it will, it will pay far

better than governmental lies.

American hogs are much more trichinous than European.

The diseases of our cattle are undoubtedly of great importance, but they bear no comparison with trichinosis of our hogs either from a monetary or sanitary point of view.

We have said enough to indicate the work our Government has before it in reference to the diseases of our animals. As Veterinarians we have but one work to do, and that is to keep hammering at the door of Congress until it recognizes the fact that such diseases do exist, and that the only way to prevent them is to recognize the fact that we have a Veterinary profession in this country, small in numbers but no less earnest in purpose than that of any other country.

ART. XXV.—CONTRACTION OF THE FOOT IN
THE HORSE.

BY THOMAS WALLEY, M. R. C. V. S.,
Principal of Royal (Dick's) Veterinary College.

ON perusing the article on "Lameness," by Mr. McLellan, in the July number of your Journal, my attention was particularly attracted to his remarks upon the subject of contraction of the hoof; and as my experience and observations have led me to form opinions on the subject similar to those held by the writer I may be permitted to add a few remarks to those already made by him.

In the first place I may observe that to my mind there can be no question as to the alternate contraction and expansion of the hoof during progression, or, at least, of its posterior portions; and I think the fact can be easily demonstrated. But I must premise that the amount of expansion, or perhaps I ought to say whether expansion shall or shall not take place, will depend mainly upon the method of application of the shoe, i. e., if the bearing surface of the shoe at the heels is

made to incline inwards (as is too often the case), or if the shoe is nailed too far back and the nails clenched too firmly—no expansion can take place; on the contrary, the heels are constantly forced towards each other every time the horse puts his foot to the ground, and the proof of this is to be found in the fact that under such circumstances the part of the shoe with which the hoof has been in contact will be found polished by the friction, and not only polished, but in some cases actually indented, and the indentation and polishing will be found gradually shading off toward the inner edge of the shoe, while towards the outer edge the line is abrupt and well marked, showing that all movement has been in an inward direction.

If such a method of shoeing is persisted in, the hoof gradually contracts and the horse goes lame.

Again, the hoof almost invariably contracts at the heel, or curves inward when the lateral cartilage becomes ossified.

The mechanism of expansion is, I think, as follows: The incidence, if weight passes through the column of bones, is in a downward and backward direction as the foot is placed on the ground, and the fetlock yields (also backward and downward), consequently the navicular bone and the flexor pedis perforans are forced in a similar direction, the result being, owing to the attachment of one division of the stellar navicular ligament to the inner aspect of the lateral cartilage, that the upper part of the cartilage is drawn inward and rendered tense, while, owing to the downward pressure exerted upon the tendon and fatty frog, the base of the cartilage, to some extent, the bulb of the heel to a greater, is forced outward, thus causing expansion of the postero-lateral portions of the hoof.

The tense condition of the cartilage under the circumstances stated is rendered very manifest by picking up the opposite part and throwing all the weight of the body upon the one under observation. That contraction is sometimes a cause of disease and lameness I am quite convinced, and the two following cases strikingly prove the proposition.

Many years ago I was asked to examine the feet of a pony with the object of giving evidence in a court of law as to the effect of long continued abnormal heat upon the hoof. The

feet of the pony in question were good and the animal was perfectly sound when bought, he was put into a stable in close proximity to the boiler of an engine; in process of time the position of the fire-place was altered, the result being that the stable floor became very dry and hot; gradually the pony was observed to go short when in action; and the smithy noticed at each time of shoeing that all the hoofs were contracting. Ultimately the pony became useless.

In the second case I had blistered the fore legs of two chestnut cobs, 14.2 hands high, used as ladies pads, and had thrown them off work for six weeks during the summer; they were placed upon spent tan, and as the summer was excessively hot the tan became very dry, the man in charge neglecting to keep it damp; as a result both horses when they were taken off the tan came out lame, and on the shoes being removed they were both found to be the subjects of bi-lateral corn with marked contraction of the hoofs.

ART. XXVI.—PHYSICAL DIAGNOSIS.*

BY E. BENJAMIN RAMSDELL, M.D.

Lecturer on Diseases of the Respiratory Apparatus, Columbia Veterinary College and School of Comparative Medicine.

The subject of our lecture to-day will be auscultation, the most important of all the methods employed in physical diagnosis. Auscultation is that process by which we listen to sounds that are produced in parts hidden from our eyes, where we cannot approach to examine without a sudden and complete cessation of their movements and thereby of their functions.

Like in percussion, we have two distinct varieties; first, the immediate; and secondly, the mediate auscultation. In the immediate variety we place the ear directly upon the chest wall, which should be covered with a thin sheet. Mediate auscultation is where we interpose between our ear and the chest wall an instrument called a stethoscope, which not only

* Abstract of a lecture delivered at Columbia Veterinary College.

intensifies the intrathoracic sounds, but also excludes all foreign noises. In my hand I hold two varieties of the stethoscope; one, the straight monaural stethoscope of Lænnec; the other, the so-called Camman's stethoscope which has two arms which terminating in tips that enter both ears.

The binaural instrument is by far the better for many reasons which can be appreciated by all. It is well for us to become accustomed to both methods of auscultation and each one should provide himself with a binaural stethoscope. In the study of the sounds produced by the respiratory apparatus we have not *one* normal sound as we noted when studying percussion; but we have *several* sounds which are normal when heard in certain places although decidedly *abnormal* when heard in other localities.

The most important of the normal sounds is the vesicular murmur, as it is called, which comes to our ear when we have healthy lung tissue between the chest wall and the bronchial tubes. Flint, in his Physiology, states that this normal vesicular murmur is produced "chiefly by the expansion of the innumerable air cells of the lungs." However, *expansion* is not as fertile a source of sound as *vibration*, and I believe that this sound is simply a modification of the sound produced by the vibration of air in the first, second and third divisions of the bronchial tubes. This sound is conveyed to our ear by a layer of air vesicles, which are little pockets of air surrounded by tense walls. This poorly conducting layer so modifies the sound that when it comes to our ear it has acquired those properties by which we designate the normal vesicular murmur. Again there is no direct current of air in the minute bronchi or in the air vesicles, for the air that enters with every inspiration being only one-eleventh the amount in the lungs, advances only as far as the second divisions of the bronchial tubes; the changes in the air further on take place by the principle of diffusion of gases which has been explained in my lectures on Physics.

This vesicular murmur has two portions, an inspiratory and an expiratory part. This fact you may study by observing that the inspiratory sound is produced as the chest wall moves outward. This will be a guide to you until you become

thoroughly acquainted with the pulmonary sounds.

The remaining part of the murmur is the expiratory portion, although there is no stop between the parts. It is one continuous sound; the only observable distinction is that the two parts differ a little in pitch. The expiratory part of the vesicular murmur is very much shorter, its pitch higher and its intensity less than that of the inspiratory portion.

This vesicular murmur, you will recollect, can only be heard when we have *healthy* lung tissue beneath our ear or stethoscope; and even this has an exception. For instance, in a case of pleurisy with effusion, although the lung may be healthy at the lower portion of the chest, yet the fluid effusion which lies between the chest wall and the lung will prevent the murmur from reaching the surface; and our ear, when placed over the area of the liquid, hears no sound. It is necessary, therefore, that the lung not alone must be healthy, but also must be in contact with the chest wall in order that the vesicular murmur can be heard.

If you place the ear or stethoscope over the trachea you will get a tubular sound, of which the first or inspiratory part is higher in pitch and has more intensity than that of the vesicular murmur. This first, or inspiratory, part of the sound ends before the act of inspiration is completed, so that there is a slight, although clearly defined, pause between the inspiratory and expiratory sound which is higher in pitch and has a duration as long or even longer than the inspiratory portion.

If you listen over the antero-sternal space in the lower animals or the supra-sternal space in man you will hear the so-called bronchial respiration, which is a sound you should become very familiar with. It has many points of resemblance to the tracheal sound, although not so well marked either in quality or intensity; in other words we say that the tracheal sound is an exaggerated bronchial respiration.

In *health* this bronchial respiration can be heard only in this region in the horse, but in man and in some of the lower animals also, in the inter-scapular region.

In disease of the lungs this bronchial sound may be heard over any part of the thorax; due to the fact that when any portion of the lung tissue gets into a condition so that it can

conduct sound to the chest wall *perfectly*, the sound produced in the bronchial tubes will be conveyed to the ear in its true condition without the modification that I claim occurs in health.

Solidified lung is a very much better conductor of sound than healthy lung tissue, so that no matter whether the air vesicles are filled with *serum*, *e. g.*, in œdema of the lungs, *blood*, *e. g.*, hemorrhagic infarction, or *inflammatory products*, *e. g.*, pneumonia; in each and every case we will get the bronchial respiration.

* * * * *

In certain conditions of the lungs we hear a sound which although similar to the normal vesicular murmur, yet is much increased in intensity and duration; this occurs where one lung is doing double duty on account of disease on the other side. It is called the exaggerated respiration. Diminished or feeble respiration, where the intensity and duration are very much lessened, is the result of pleurisy, rheumatism, or paralysis of intercostal muscles, or emphysema. Absent or suppressed respiration is caused by large pleuritic effusions, pneumo-thorax, or where there is a complete obstruction of a large bronchus.

After studying the normal sounds with their variations we now come to a class of respiratory sounds which are heard only in disease. These have been named adventitious sounds or rales. A rale is a sound heard only in disease and has characteristics entirely different from the normal sounds. It may be produced along with the normal murmurs or may take the place of them. It may originate in the trachea, in a large or small bronchus, in the capillary bronchi, in the air cells, or in abnormal cavities situated within the lung substance.

It may be produced within the bronchial tubes either by a diminution of their calibre, caused by thickening of their mucous lining, by the vibration of viscid matter collected in them, or by air bubbling through fluid, either blood, pus, serum, or mucus, situated either in the trachea, (large or small) bronchi, or in cavities in the lung tissue.

Rales may be heard either during inspiration or expiration, or during both. From their nature you can readily see how

rational it is to divide them into dry and moist rales, according not alone to their character, but also on account of the manner of their production.

Under the heading "dry rales" we have two classes; first, the sonorous, and, secondly, the sibilant rales.

The sonorous rale is a low-pitched sound with a decidedly snoring character produced by the vibration of a column of air which is passing over a roughened or irregular surface. These sounds arise in the larger bronchial tubes when we have an inflammatory thickening of the mucous layer or else a spasm of the muscular layer causing a diminution of the calibre of the tube or a corrugation of its mucous lining.

The sibilant rales are produced under precisely the same conditions as the sonorous rales, except that the former arise only in the smallest bronchial tubes.

The sibilant rale is a dry rale with a hissing, whistling character, and is higher pitched than the sonorous rale.

Both classes of dry rales are heard during both inspiration and expiration.

These sounds are usually indicative of the first stage of bronchitis; that is an inflammation of the mucous membrane lining these tubes. The sonorous rale indicating inflammation in the large bronchi, while the sibilant rale points to an inflammation in the smallest bronchial tubes.

Of the moist rales we have four distinct varieties; first, crepitant rales; secondly, sub-crepitant rales; thirdly, mucous rales; and fourthly, gurgles.

The crepitant rales which are heard only during the latter part and at the end of inspiration have been likened to the fine crackling produced by pinching and rubbing a lock of hair between the thumb and forefinger immediately in front of the ear. Two theories as to its production have been advanced; first, that it is caused by the separating at the end of inspiration of the walls of the air vesicles, which have been glued together during expiration by a viscid exudation, the result of inflammation; secondly, that it is produced by minute bubbles of air passing through a fluid at the mouth of the air vesicles. This rale is indicative of the first stage of pneumonia, or of oedema of the lungs.

The sub-crepitant rale is heard both during inspiration and expiration, and sounds like minute bubbles. Such is really the case, for the sound is produced in the smallest bronchi by minute bubbles of air passing through fluid, either serum, blood, pus, or mucus.

Thus it is manifest in oedema of the lungs, in hemorrhage, in the moist stage of capillary bronchitis and in the last stage of pneumonia.

Mucous rales are nothing more than large or exaggerated subcrepitant rales. They are large, bubbling sound, heard both during inspiration and expiration and are produced in the bronchial tubes by bubbles of air passing through mucus, serum, pus, or blood. They are usually present during the moist stage of bronchitis, or in advanced oedema of the lungs, etc.

We have, of course, large and small mucous rales, or, as they are called by some diagnosticians, "coarse" and "fine" rales. These differ according to the size of the bronchial tubes in which they are produced. "Coarse" rales being produced in the largest bronchi, while the "fine" rales occur in the smallest tubes.

Gurgles, the last form of moist rales, differ in their origin very much from the other kinds before mentioned, inasmuch as the gurgles are produced in cavities in the lung tissue, the result of a phthisical process, or an abscess of the lung following an unresolved pneumonia.

Where we have a cavity half-filled with fluid, usually pus, and a bronchus entering this cavity below the level of the fluid we will get this gurgling sound.

One other intra-thoracic sound, which is of exceeding great importance that you should apprehend is the pleuritic friction sound.

This sound, standing a class by itself, differs from the other sounds before mentioned, in that it is produced not within the lung, but outside of it.

That beautiful, delicate serous membrane, the pleura, whose two surfaces play one upon the other, so smoothly, so noiselessly, and so painlessly in health, becomes, under the injurious action of inflammation, so roughened that, besides the

pain, besides the pleuritic friction fremitus that comes to us by palpation, it gives forth at each inspiration also a sound, a grazing, rubbing sound, in the acute inflammation, and as some describe it, a grating and creaking sound in chronic pleurisy. These sounds, heard at each inspiration, occur just over the point of inflammation, and we speak of them as the localized pleuritic friction sounds.

ART. XXVII.—CASTRATION STATISTICS.

BY W. S. ADAMS, V.S.

From the Quarterly Journal of Veterinary Science in India.

THE register of Castration at the Remount Depot contains a record of over 10,000 cases, and I have thought that some interesting or valuable information might be collected therefrom.

Before the operation, each horse receives a dose of physic, and after the effects of the purgative have passed off, grain is given for three days. The horse is operated upon on the morning of the fourth day. The vascular portion of the cord is divided by the scraping method, a knife with a serrated edge, made for the purpose, is used. On the day of the operation the horse is kept as quiet as possible, and his head is tied up with a rope long enough to permit him to lie down. On the following morning he is let loose in his stall. On the morning of the third day all the coagula are removed from the scrotum, the parts cleansed and dressed. On the evening of the same day a short walk is given. The wounds are cleansed morning and evening and the walk is gradually prolonged. On the day of operation the feed is reduced and an equivalent of bran is given. On the eighth day after the operation full feed is allowed. The horse is discharged off sick-report usually about the twenty-first day.

The chief causes of death from the operation and the per-

centage of deaths on the total number of operations, 10,305, are as follows:—

Peritonitis,	-	-	116	—	1.12
Gangrene,	-	-	76	—	.73
Hæmorrhage,	-	-	22	—	.21
Tetanus,	-	-	16	—	.15

In considering this mortality it is necessary to remember that the age of the horses operated on is from four to six years; but there are many rising four, and six off.

Peritonitis.—I am inclined to the opinion that there is a constitutional tendency to this disease which is aggravated by exposure to inclement weather, or by the depressing effects of extreme heat.

The attack is ushered in by severe rigors accompanied by profuse cold perspiration, and the horse is found pulseless. As soon as these cases occur the patient is rubbed as dry as possible, warmly clothed, ears pulled, legs hand-rubbed and bandaged, and a strong stimulant given. These cases generally occur from the third to the sixth day after operation. In the majority the rigors pass off, but in some they appear to be premonitory of acute peritonitis.

These "cold fits," as they are termed, puzzled me very much at first. I was in doubt whether they were due to faintness from simple exhaustion, or to the disturbance of the system on the formation of pus, but on observation I have concluded that these rigors are premonitory of peritonitis, and that if prompt and energetic measures be adopted, the attack may be staved off.

Gangrene.—At first there is excessive effusion into the scrotum, penis and adjacent parts, which is not reduced by puncturing, but appears to become solidified as soon as thrown out. No healthy suppuration takes place in the original wounds, but an offensive ichorous discharge sets up, the effusion continues, advances forward to the sternum and up the perineum, the parts becoming cold and insensitive. The animal dies a lingering death from exhaustion.

Hæmorrhage.—Externally this is slight and easily controlled by cold and pressure. All the deaths reported have been caused by internal hæmorrhage. This is due, I think, either

to accidental causes or to the artery having been divided too high up, the divided extremity being drawn within the abdomen. This is less likely to occur in older horses where the testes are more pendulous.

Tetanus.—It occurs under all circumstances and is quite uncontrollable. I have seen many cases of Tetanus, but none so acute and rapid in causing death as cases consequent on castration. The disease may occur any time between the 4th and 27th day after operation, but the average is fifteen days.

There is one other surgical complication on which I wish to make a few remarks, and that is Hernia. Of the 10,305 cases there were ten deaths from this cause.

During the struggle of the animal at the time of operation, a portion of the intestines are occasionally forced into the scrotum. In these cases, if it is possible to reduce the hernia quickly, the patient has a good chance of recovery. It is much more serious, however, when the protrusion takes place after the operation when the horse is standing in his stall, as there is then usually a greater length protruded and great fear of injury to the intestine.

A rise of temperature takes place on the third day after the operation, continuing until the 8th and gradually falling until the normal standard is resumed on the 13th day.

In 1856 a series of experiments were conducted by Mr. James Thacker relative to the advantages or disadvantages of the different methods of operating. The ligature, actual cautery, caustic clamps and the scraping method were all tried and the results were in favor of the latter method. Further experiments were carried out by Mr. Shaw and the late Mr. Richardson, V.S., with regard to the relative merits of the scraping method and the actual cautery. These also resulted in favor of the scraping.

ART. XXVIII.—THE COMPARATIVE PHYSIOLOGY OF MENSTRUATION.

BY ALFRED WILTSHIRE, M.D., F.R.C.P., LONDON.

From the London Veterinary Journal.

THE comparative method of study is, before all, the most trustworthy help towards the attainment of accurate knowledge, since, by its aid, a just appreciation of the relative value of facts may best be acquired. Accordingly, it merits employment whenever available, furnishing an efficient corrective of erroneous or disproportionate conceptions. It is valuable, also, inasmuch as it may afford clues to, or enlighten us, respecting, important correlations; while its influence, in checking and balancing our views and conclusions, is uniformly beneficial. Acquaintance with the value of this method has led me to regard certain departments of medicine by its light, and among them the function of menstruation, in the elucidation of which it contributes important and suggestive information.

The illumination thrown by the comparative method upon certain biological problems ancillary to medicine is great; and the fervent, if not sanguine, hope is excited, that not only may similar enlightenment be vouchsafed in respect to recondite pathological problems, but that, through the pursuit of this instructive method, medicine, considered in its entirety one of the noblest studies, may, in process of time, be established upon foundations whence it may rise to a position not inferior to that accorded to other sciences.

The impression has long and widely prevailed, that the menstrual function is an attribute peculiar to the human female. Whether this be erroneous or not, will appear when inquiry is made into the manner in which the periodical activity of the reproductive organs is displayed or exercised in the females of the lower animals. Making due allowance for generic peculiarities, this function will be found to agree with

others of the animal economy, in displaying harmonious subordination to the law of evolution. Inquired into on this basis, and in accordance with the comparative method, the evolution, of oestromenstruation is discovered to be orderly; and to correspond broadly with the evolution, anatomical and physiological, of the generative system of animals. In harmony with the universal result of biological research, the primitive indications of the function will be found to be but feebly marked. Gradually and progressively, however, the manifestations become more and more distinct, until, ultimately, the highest stage is attained in the human species. Thus traced step by step, it will be found that, from feeble and obscure beginnings in the lower creatures, the function emerges and develops until, in the highest mammals, it is unmistakably pronounced. It will also appear that, after its establishment at puberty—an epoch marking the assumption of the capacity for reproduction, and usually arriving only towards the time when the rate of growth is diminishing—its equilibrium is liable to fluctuation, and even disturbance, owing to the extreme sensitiveness of the reproductive system to vicissitudes of the environment, as Darwin and others have conclusively shown. It may be hoped that the laws governing this instability of equilibration will also be fully discovered, and, in process of time, admit of formulation, so to render them amenable to remedial modification. Pursued and investigated on such a basis, there is a prospect that the physiology of the function may be brought within the domain of science, and cease to be a wonderment and mystery. It may also be hoped that the discovery of the physiological laws governing it will furnish, not only a foundation for the establishment of a sound and intelligent system of therapeutics, for correcting aberrations and remedying deviations, but also a more reliable basis than at present exists for pathological knowledge. Mr. Herbert Spencer well says (*Data of Ethics*, p. 277):—"Pathological science depends for its advances on previous advances made by physiological science. The very conception of disordered action implies a preconception of well-ordered action. Before it can be decided that the heart is beating faster or slower than it should, its healthy rate of beating must be learnt; before the pulse can be recognised

as too weak or too strong, its proper strength must be known; and so on throughout. Even the rudest and most empirical ideas of diseases presuppose ideas of the healthy states, from which they are deviations; and obviously the diagnosis of diseases can become scientific only as fast as there arises scientific knowledge of organic actions that are undiseased." The gain accruing from accurate physiological knowledge may thus be great, and ever growing.

So conspicuous a manifestation of sexual aptitude as a menstrual flux, whether sanguineous or not, is hardly to be looked for in the females of classes, below the mammalian, with which the study of the evolution of the catamenial function might appropriately commence, for "in the classes of birds, fishes, and oviparous reptiles, there is no uterus" (Laycock.) But there are generative canals, out of which, in the process of evolution, the uterus arises, just as does the bladder out of the renal excretory canals; being developed by the aggregation of muscular fibres, and differentiation of epithelial elements at certain parts (like the stomach, with its powerful muscular and glandular apparatus in the higher mammals, or the gizzard in the fowl); and it may be useful to trace their evolution, for, even in certain non-mammalian creatures, the excitement attending the active exercise of the reproductive function is occasionally displayed by an increased vascularity and pigmentation of certain structures, particularly about the genital orifices, which exhibit a kind of efflorescence at the periods of sexual excitement. For instance, according to Pouchet, "Guersant says that, at the epoch of the oviposit (in fishes), the orifice of their sexual apparatus swells, and is clothed with a red tint. Savants who, like Spangenberg, are occupied in studying the genital organs of birds, have recognised that they experience also at the time of the oviposit a manifest excitement." I am informed that the genitals of the parrot and pigeon tribes show this excitement. In other creatures, *e. g.*, amphibia, the orifices of the generative canals opening into the cloaca are generally increased in size at the breeding season. Reptiles also show increase in cutaneous secretions, especially of the odorous variety, in association with sexual activity. Laycock observes: "Many tortoises

smell of musk, which probably proceeds from follicles connected with the cloaca. Several lizard, among others the iguana, have a row of small follicles with round orifices at the inner side of the thigh, which secrete, especially at the coupling season, an odorous fatty liquid;” and Mr. Darwin (*Descent of Man*, p. 352) says: “During the breeding season, the anal scent-glands of snakes are in active function, and so it is with the same glands in lizards.” As we ascend in the scale of creation, we shall find that the genital apertures of the higher creatures present analogous phenomena, culminating in the highest even in an issue of blood.

Attention may here be directed, *en passant*, to the general relations of pigmentation to reproduction, which are striking, and, as Mr. Darwin has shown, are in birds remarkable. He says (*Descent of Man* p. 229): “Many birds acquire bright colors and other decorations in the breeding season alone;” and (p. 496) “certain ornamental appendages become enlarged, turgid, and brightly colored during the act of courtship.” Even in insects, sexual pigmentation is often highly conspicuous; and Mr. Darwin (*Ibid.*, p. 265) says: “The sedentary annelids become duller-colored, according to M. Quartrefages, after the period of reproduction; and this, I presume, may be attributed to their less vigorous condition at that time.” We may therefore derive instruction from the observation of the suggestive phenomena accompanying the active exercise of the reproductive functions, even in the lowest creatures.

Before the difference of sexes arises, both sexual elements (sperm and germ) exist, and are carried in the body of a single individual, though, curiously enough, the congress of two separate individuals, is in some cases necessary for fertilization, *e. g.*, in creatures which are not stationary.

Gegenbaur (*Elem. Comp. Anat.*, p. 54) says: “All those animals which unite in themselves both kinds of productive organs are known as Hermaphrodites. A separation of sexes is apparently foreshadowed in various forms, by the alternating activity of the organs, at the one time the egg-forming, and at another time the sperm-forming organ exercising its function. Hermaphroditism is the precursor of sexual differentiation...

A separation of the sexes effects the whole of the organism, for it produces a series of changes in each sex, which effect organs that had primitively little to do with the sexual function ;” and Darwin remarks, “It has now been ascertained that, at a very early embryonic period, both sexes possess true male and female glands.”

Before generative ducts arise, the generative products escape from the bodies of the lowest creatures by a coelomic orifice, and occasionally, even in this primitive stage, some excitement is displayed around the aperture ; but in the stage immediately above, when ducts begin to appear, imperfect though they be, we find that there is a remarkable constancy in the relation they bear to the renal excretory canals ; that, in fact, the generative products, having no proper canals of their own, make use of those of the renal system, and these often display pigmentation at their orifices.

According to Gegenbaur (*Elem. Comp. Anat.*, p. 609), “The germ-glands are developed from the structures known as genital ridges. Sometimes more and sometimes less of this ridge is converted into the ovary or testis.” These genital ridges are found in the abdominal cavity, the epithelial investment of which “retains its primitive character along a tract which corresponds to the rudiment of the primitive kidney longer than it does in other regions ; and this epithelial layer may be distinguished as the germinal epithelium.”

In the lowest forms, there are no generative canals. “Both sets of generative products are passed into the coelom, whence they reach the exterior by the abdominal pore.....In the Salmonidæ, the eggs are passed into the abdominal cavity, and are evacuated through the abdominal pore.” Again (p. 53): “In their simplest condition the products of the reproductive glands merely break away from the spot where they are formed, and pass into the digestive sac, or into the body cavity, or even directly to the exterior. Gradually, however, ducts, which are often very complicated in character, are added on ; it is probable that these ducts, are not primitively connected with the germinal glands. Where these ducts can be seen to have relation to other organs, these appear to be excretory organs, and have been altered so as to

correspond to this function. It becomes a great question whether the excretory ducts of the reproductive matter are not in all cases excretory organs."

When, having passed beyond the primitive ductless stage, inquiry is made into the origin of the excretory ducts of the reproductive glands, we find that they are furnished by the primitive renal excretory apparatus (archinephron), the organs which eliminate the nitrogenous excreta from the body—organs distinctly derived from dermal glands (Gegenbaur, p. 46). The primary archinephric duct divides into two parts, so that there come to be two canals. "One commences at the anterior abdominal orifice of the primary duct, and has no further relations to the kidney. This is the Müllerian duct" (*Ibid.*, p. 64). Müller's duct becomes, in females, efferent, or oviducts, portions of which are ultimately differentiated into uteri. (The other archinephric duct becomes the efferent duct of the kidney, or ureter.

And the late Mr. Balfour, in his admirable work on *Embryology*, shows how closely related the excretory and generative ducts are in the vertebrata.

The basis for the generative and urinary ducts is formed by the segmental duct, which is the duct of the pronephros. These, he says, "are the most primitive parts of the vertebrate excretory system." The meso-nephros, or Wolffian body, is formed of glandular canals, which open in the body cavity of the embryo. The segmental duct becomes, in many forms, divided longitudinally into two parts: one with segmental tubes, forming the Wolffian or mesonephric duct, the other the Müllerian duct.

The intimate relations thus indicated primitively between the urinary and generative organs, foreshadow a connection which persists even in the highest mammalia, a point remarked by Aristotle.

In the Amphibia, the Müllerian ducts form oviducts, opening separately into the cloaca. "It is generally increased in size at the breeding season; this results in its being thrown into a number of coils. In the oviparous species (*Salamandra*), the terminal portion performs the function of a uterus" (Gegenbaur, p. 612). A similar but more advanced condition obtains

in the Sauropsida, the oviducts being large coiled canals, with mucous membrane set in longitudinal folds, which are most marked in the lower portion. This latter portion secretes the shell, the anterior part the albumen.

We find, then, that even in certain low forms, as in some of the foregoing, the orifices of the genital canals are apt to display pigmentary or vascular efflorescence at the breeding times. The stimulating influence of activity in the initiatory acts of reproduction upon pigmentation generally is remarkable and conspicuous throughout nearly the whole of the animal and vegetable world. The exquisite beauty of flowers is sexual, and in close alliance therewith is their perfume, often equally attractive.

The brilliant hues of many birds, fishes, etc., owe their existence to a sexual origin; and, as already remarked, the orifices, whence the germinal product escapes, are in some of the latter highly pigmented.

It is, however, with the Mammalia that our study of the comparative physiology of menstruation properly begins. They, as a class, are elevated above the other portions of the animal world by the endowment of a higher organization in many respects, and particularly by the possession of organs conferring upon them their distinctive appellation; organs which we shall find to exist in correlation with certain developments of other portions of the reproductive system, as well as of the general system.

Gegenbaur (p. 615) remarks: "In the Mammalia, the generative apparatus undergoes great metamorphoses, owing to the further development of various portions of the efferent ducts and the formation of a number of accessory organs. In the female apparatus, these are largely correlated with the relations that obtain between the embryo and the maternal organism. As this is least marked in the Monotremata, they undergo the least amount of modification, and have therefore direct relations to the lowest divisions of the Vertebrata, and especially to the Sauropsida. The oviducts open separately into a sinus urogenitalis, which communicates with the cloaca. The lower end of the oviduct, which is distinguished by the greater thickness of its muscular wall, forms an uterus; but

this merely corresponds to the structures which likewise function as an uterus in any Anamia and Sauropsida."

With regard to the Monotremata, the lowest members of the mammalian series, but little information is available respecting the phenomena observable at their periods of sexual excitement. The class is now neither numerous nor widely distributed, and opportunities for inquiry have not been at my command.

Pouchet remarks of them: "Many of the lowest mammalia are ovoviviparous (*Ornithorhynchus paradoxus*, Blum.; *Echidna hystrix*, Cuv.), or produce only simple embryos (*Didelphys*), whilst all the others present the characters of most marked viviparity." They resemble birds in possessing a common cloaca, into which the generative, renal, and intestinal canals open. They have no vaginae, and the uteri are rudimentary, affording no provision for the sustained growth and nourishment of the foetus, which, like that of marsupials, is soon cast out.

In Marsupials (such as the kangaroo), the evolution of the sexual system is somewhat more advanced, there being no vaginae, as the vaginal canals open into the sinus urogenitalis. The upper portion of each different duct forms an oviduct, while the next and thicker-walled portion forms an uterus. Gegenbaur says: "Each of the two uteri opens by a papilliform process into a portion, which from the exterior appears to be common to them both, and which is formed by the union of the two Müllerian ducts. A curved vagina is given off from this on each side (*Didelphys*), or the commencement of the tube is replaced by the cæcal sac which is pushed out backwards, and is usually, though not always, divided internally by a medium partition; from this sac, the distinct 'vaginal canals' pass in a curved direction to the urogenital sinus (*Halmaturus*)."

My inquiries into the manifestations of sexual aptitude exhibited by the females of Marsupials, like the kangaroo, tend, so far as they go, to support the hypothetical conclusion to which my researches had already led me, namely, that in accordance with their lowly position as mammals having inferiorly evolved sexual organs, they would display comparatively slight and inconspicuous local evidences of the rut or "heat."

Kangaroos are known to breed in this country ; and although certain gestative phenomena are still shrouded in obscurity—e, g., the mode of transference of the immature embryo to the marsupial sac, which, according to Owen, occurs in *Macropus Major* about thirty-eight days after impregnation—yet the times of “heat” have been recognized, and copulation witnessed, but only lately has any œstrual discharge been remarked. It must be remembered that in these creatures one orifice serves for the exit of fæces, urine, and generative products (in *Marsupialia* “there is even a common sphincter for the anus and urogenital orifice,” Gegenbaur, p. 622), and that this, when closed, conceals in the cloaca the several corresponding apertures opening thereinto. Probably, therefore, whatever exudation attends the epochs of sexual excitement, if any there be, is hidden in the cloaca, unless, indeed, it should chance to be abundant, and that is not anticipated ; neither, likewise, is it to be expected that a flux would partake of a distinctly sanguineous character, unless in so feeble and insignificant a degree as to be scarcely recognizable.

The most one appears warranted in expecting in these and allied lowly mammalia, is a mucous flux, perhaps feebly stained, with some increased odorousness, which, as in the higher mammals, is highly attractive and exciting to the males.

I have gratefully to acknowledge my indebtedness for information respecting the kangaroos at the Zoölogical Gardens to Mr. Bartlett, the able superintendent, who informs me that the Society’s kangaroos display sexual excitement in September (which, he believes, corresponds in the southern hemisphere to our spring-time), and also in our spring month of April, the returning warmth of the season apparently stimulating them.

Until recently, neither Mr. Bartlett nor the keeper of the kangaroos had remarked any exudation or discharge from the cloacal orifice of the femals at the time of “heat ;” but, since attention has been directed to this point at my request, the keeper informs me that he has observed a “mattery slimy” discharge, slightly tinged with a reddish color, at these times. He also informed me that, lately, prolonged copulation in a young female kangaroo, which had never bred, caused hæmorrhage, necessitating separation from the male. When impreg-

nation has occurred, a close watch has been kept upon the females, in the hope of discovering the mode of transference of the embryo from the generative passages to the marsupium, but, hitherto, unsuccessfully. Mr. Bartlett tells me that something resembling blood and mucous has been seen to be conveyed by the female in her fore-paws from the cloaca to the marsupium, in which it was supposed the embryo might be entangled; and the keeper says that they sometimes find "hollow fleshy things" in the pens (foetal envelopes); but I understand that no conclusive observations have yet been made. The issue of blood in question, small though it be, at what in these creatures is equivalent to the parturient act, suggests obvious analogies.

Above these grades, whose sexual systems and mode of reproduction are peculiar (*aplacentalia*), we come to a multitude of mammals of various kinds (*placentalia*), concerning some of which observation has taught us many interesting facts, though these are still too few to satisfy legitimate desire for information.

In all creatures there are periods of "heat" or sexual excitement, when both males and females are apt for procreation. These periods are marked by systematic excitement, and by local phenomena of a more or less conspicuous character. Among the mammalia, the times of heat display a seasonal periodicity; that is to say, they recur annually, biennially, quarterly, or at more frequent intervals, according as the conditions of existence or environments are favorable, or the reverse, and, apparently in some degree, according to the size of the creature, being for example, rare in the elephant. Yet in every creature seasonal periodicity, at longer or shorter intervals, and, as Darwin and Laycock have shown, this periodicity always partakes of an hebdomadal character. It is always some greater or lesser multiple of a weekly period.

In the lower animals in a wild or feral state, the aptitude for procreation is seasonal, recurring mostly at times when food and warmth are plentiful. Under normal circumstances, the earliest longing for sexual congress is promptly gratified; in the female, conception ensues, gestation proceeds in its appointed course, and until the genesial cycle has been completed

by parturition, the "rut" or "heat," with its attendant desire for copulation does not ordinarily occur. But, impregnation failing from any cause (e. g., absence of the male at the appropriate season of sexual appetite), we may inquire, do the symptoms of heat persist indefinitely? and, if not, what period elapses before they are again exhibited? Observation of wild animals, both in a state of nature and during captivity (when the latter does not interfere with reproduction), and, still better of domesticated animals, shows that, after a definite period of quiescence, oestruation, or the "rut," invariably recurs at epochs which strictly conform to some multiple of weeks. In highly-bred and well-cared-for domesticated animals, oestruation would probably be renewed periodically, until arrested by conception; for it is well known that domestication enormously enhances the capacity for reproduction, and renders that sustained which, under other conditions of environment, subsides until it is renewed by the seasonal awakening. It is probable that, in the wild state, in the absence of the male, the "heat," or stimulus to sexual desire, would, after a few periodical manifestations, die away, grow cold, and subside; remaining in abeyance until the return of the season with which it is primitively allied. This long rhythmed periodicity may be termed "seasonal," since it appears to be primarily allied with or dependent upon seasonal changes, as has been abundantly demonstrated by Darwin, Herbert Spencer, Laycock, and others. This seasonal periodicity of "heat" accounts for a corresponding periodicity in delivery, for, as is well known, many wild females bring forth their young at mild and favorable seasons, as spring, and not at inclement or unfructuous times. This is generally so in our domesticated animals when art does not interfere with their natural instincts; and, in truth, this primitive seasonal condition of the exercise of the generative function underlies the process of reproduction, even in the highest creatures. A trace of this seasonal influence is certainly still conspicuous in the greater tendency manifested by the human female to conceive at certain annual epochs; and it seems probable that this seasonal influence underlies the genesial function in all creatures, and is a relic and trace of a primitive or primordial

condition governing reproduction.

We shall see that not only does woman most frequently begin their menstrual life in the summer months, but she brings forth her offspring more frequently in the spring than in other other seasons, just as the lower animals do. Many years ago, I concluded that every woman had a law peculiar to herself, which governed the times of her bringing forth (and conceiving); that, in truth, she was more prone to bring forth at certain epochs than at others; and subsequent researches have not only abundantly confirmed this surmise, but established the accuracy of the forecast. The evidence is given in other lectures.

The influence of civilization and domestication in expanding the reproductive powers is conspicuous. And yet the generative system, as Mr. Darwin has ably and conclusively shown, is highly sensitive to changes in the environment of the individual. Seemingly, the higher mental endowment of advanced human beings carries with it not only an augmented capacity for the reproduction of their own species, but also bestows a like advantage upon the creatures showing amenability to man's sway by flourishing under his dominion. Not alone does the human race increase, but man's flocks and herds multiply prodigiously. Would that proportional care were observed in the breeding and propagation of the human species, as, *e. g.*, is taken in that of animals of merely commercial value!

(*To be continued.*)

ART. XXIX.—CUTANEOUS DISEASE IN THE HORSE SIMILAR TO TINEA FAVOSA IN MAN.

BY PROFESSOR R. BASSI.

In Il Medico Veterinario, Torino.

THE first cases of parasitic disease which I undertake to describe did not come to my notice in Turin until the year 1876. Before that time I happened to observe, principally in young horses imported from foreign countries, especially from England, herpes tonsurans, never the disease above

referred to. My first observations were on American, French and English horses. The disease is more dreaded by horse-dealers than herpes tonsurans, as it is a more serious one whether clinically or economically considered. It usually attacks the back and side in the neighborhood of the root of the tail. It consists of an eruption of pimples which develop and run their course in three or four weeks according to the greater or lesser depth to which the inflammatory action extends or to the effects of the pressure or friction of the harness.

In the years 1877-82, I had been enabled to observe the disease in the stables of the horse merchants in Turin, Milan, Paris and London; had become convinced that it was new and entirely different from the ordinary cutaneous affections of the horse. In England it was regarded as an infection introduced with the horses imported from North America, especially Canada. On close investigation I found that the disease was propagated by the promiscuous use of harness and saddle, the parts in contact with them becoming soon covered by the peculiar eruption. The question of contagion was affirmatively settled by the results of a series of experiments which I made with the virus. Microscopical examinations resulted in the finding of a micro-organism similar to that obtained in *tinea favosa* of the human species.

Veterinary Surgeon Mans had already described the disease as "Pustulous exanthema," and refers to its transmission by the promiscuous use of harness and its introduction into Belgium through English horses.*

Professor Friedberger mentions it by the name of "Pustulous contagious dermatitis," and the fact that in London the American horses received the credit of its introduction.†

The clinical facts collected by the author are abridged as follows :

In the beginning of 1879 a horse merchant in Monaco imported eighteen horses directly from England. One after the other, they were all attacked by a peculiar eruption, variable in its point of origin, form and facility for diffusion by

* *Annals de Médecine Vétérinaire*, 1880.

† *Wochenschrift für Thierheilkunde*, 1880.

contagion. In some the eruption was observed soon after arrival ; in others not until after the lapse of four weeks. The disease generally commences on the back where the girth is applied, extending behind and on the sides. The first phenomena are often attributed to a superficial contusion produced by the girth, but the rapid spread of the affection notwithstanding all possible precautions, made the error evident. The disease presents difference in respect to the extension of the area occupied ; in some horses not being more than the size of a hand, whilst in others it spreads over the shoulders, sides and back. When attacked, the skin becomes painful on pressure, hot and swollen and soon round prominences appear, from the size of a pea to that of a hazel nut, either distinct and isolated or coalesced in little groups, the hairs becoming disarranged over them in little tufts. These prominences are like hard knots, somewhat limited, which penetrate the skin deeply, being more painful than itchy as in furuncle. After progressing gradually six or eight days a pustule is observed to form on their summits. On removing the necrosed tissue which forms on its surface, a dense pus appears, creamy and of healthy aspect. A scab soon forms of yellow color or brown if admixed with blood, which, implicating the surrounding hairs forms a thick covering, friable and solidly adherent. On these being detached a deep ulcer becomes visible. The base of these ulcers, of a round form reaching a remarkable depth in the skin, were surrounded by tissues in a state of inflammatory infiltration of a grizzly yellow color and were covered by a purulent exudation. Their margins were easily broken down. On cessation of inflammatory action the ulcers granulated and cicatrized, this occurring generally about the fourteenth day. The general condition is seldom disturbed,

The treatment in mild cases consists in keeping the parts thoroughly clean and disinfected. If this should not prove effectual, mercurial ointment will be found useful. It is hardly necessary to insist on the precautionary measures which should be taken to prevent the spread of the contagion.

ART. XXX.—LAMENESS.

BY E. A. MCCLELLAN, D. V. S.

Lecture, on Shoeing, Diseases of the Feet and Legs, Columbia Veterinary College.

IN my last lecture, I directed your attention to the different parts of the external form of the horse, that were the most common seat of lesion. To-day we will speak of lameness as manifested in action, with some of the causes.

In examining the horse for lameness, or irregular action, we must first become familiar with what constitutes the normal action, and just here we are met with the difficulty that horses differ in their action. We may have what we call perfect action; the bones of the limb may be so arranged and the limbs be in such relation to the body, and the muscles so advantageously placed, as that progression shall be accomplished in an easy and graceful manner; or we may have the opposite condition, in which motion is painful both to the observer and animal. We observe then, that abnormalities in gait, are the result of defects in conformation, or of disease, or of both combined. For example: If the toe of the foot on the anterior extremity turns outward, with the knee faced in the same direction, when the leg is flexed during progression, the foot will be thrown inward and carried close to the opposite leg; then as it approaches the ground it will be carried slightly outward. The opposite condition is often seen, especially in heavy horses with wide chests, the toe turning in and during action being carried forward with an outward swing.

As examples of disease modifying gait, we may observe the horse suffering from navicular disease or laminitis or spavin, etc. We have examples of the modifying effect of disease and conformation combined, when these defective forms are associated with one or more of the diseased conditions common to the foot or leg.

Maladjustment of hoof, or shoe, also have a modifying effect upon the gait. When the foot is left higher upon one side than the other, the horse is compelled to assume a slightly changed position in standing, and also to change in some degree the direction in which the foot is advanced in action. For instance, if the hoof becomes high upon the outside from any cause, the foot in standing will be held slightly outward, and in progression will be carried first inward, and then forward and outward. Upon this fact are based the efforts of the shoeing smith, and trainer of trotting horses, to remedy defective action. But to pursue a more systematic course in our treatment of the subject of the diagnosis of lameness, it will be necessary for us to state some elementary facts for the benefit of those who are gaining here almost their first knowledge of the horse.

Lameness in the horse is not difficult to detect. The regular rhythmical action is broken, and the action becomes more or less irregular. The *limb* that is lame is slightly more difficult, but the precise seat, or location of the cause of the lameness, is frequently most difficult. In obscure cases, the history of the case must be inquired into. The length of time the animal has been lame, the condition under which lameness was first manifested. Is the lameness constant? Was it the result of an accident, a fall, or, after an unusually long drive, or after exposure to cold and damp conditions? Was it manifested after some disease had run its course? etc., etc.

In thus learning the history, you may obtain a clue to the seat of lesion, and you come to have certain causes of lameness fixed in the mind, and this gives confidence. Just here, let me remind you that in palpation, some nervous excitable horses dislike to be handled and you may be deceived in supposing that you have discovered the seat of lesion, by the resistance or shrinking from manipulation. In such cases you quietly persist in your efforts until this action passes away, when you will be able to test the relative sensitiveness of the parts.

When the animal is lame in the anterior extremity, the head is dropped when the sound limb is placed upon the ground, but when lame in a posterior extremity, the head is dropped

when the lame limb touches the ground. When the animal is lame in an anterior limb, we note the manner in which the feet and legs are carried. When the seat of lesion is below the region of the knee, the leg is flexed quickly, and if there has been previous to the manifestation of lameness, any eccentricity in gait, this will be increased. As for instance, if the foot was carried inward this anomaly may be increased, so that the limb upon the ground may be struck by the other in passing. A stumbling gait, is another indication that the lameness is in this region. Throwing the weight upon the foot in such a manner as to wear the shoe excessively upon one side, or the toe, or the heel, are indications of lameness in this region.

A good position to discover lameness in the anterior extremity, is to stand directly in a line with the horse as he moves towards you. In this position we observe the flexion of the leg, or the bending of the knee. Are the knees carried to the same height? Do the articulations move with equal freedom? Lesions about the carpus, whether from interfering, rheumatic arthritis, inflammation of tendonous structures, give a stiffness in the flexion of the knee. When the limb is advanced with a dragging motion, the toe scarcely elevated from the ground, we look for the lesion in the muscular region of the limb; lameness from lesion above the knee is comparatively infrequent.

For the detection of lameness in the posterior extremity, a position directly behind the animal as he moves from you is the best. As we have before stated, the head is dropped when the lame limb touches the ground, but the lameness may be slight and in that case the dropping of the head may be scarcely noticeable, and it will be necessary to observe the comparative height of the hips during progression. When the action is perfect, the hips are carried perfectly level, but when lameness is present, this similarity of action is destroyed. When the hock is the seat of disease the hip upon that side is elevated the most during progression, and the same is true of lameness which has its seat in lower portions of the leg. The horse when lame flexes and extends the leg in such a manner as to save the injured part as much as possible from motion.

From this fact you have a valuable aid to diagnosis. Thus in

what is known as "sprain of the hip," in walking, the leg is carried forward carefully, with the hip held in a rigid manner, while if the trot is attempted it is performed with the greatest difficulty. We also inspect the leg for defects in its form, to discover its weak points. The *hock* is a frequent seat of lameness, and if we find one defective in form, bent either out or in, too straight or too crooked, our attention is at once directed to it. A stiffness in flexion, and a lameness which is greatest with the beginning of exercise, are characteristic of lameness of this region. The region of the fetlock, may be the seat of lameness. This may be due to a variety of causes. If the pastern be long and oblique, the tendonous and ligamentous structures are likely to suffer. Interfering, is not an infrequent cause of lameness. The swelling may not be great, and the skin not be broken, and yet the lameness from this cause may be excessive. The fetlock may be shot forward, and the weight of the body being sustained in this position, severe sprain may result. In lesions of this region the lameness is not usually diminished by exercise, and it is likely to be increased. A horse may become lame upon a journey from many causes. A stone may become caught between frog and shoe and injuriously press upon the sole. A sharp instrument may penetrate through the plantar horn. We have already alluded to interfering affecting the fetlock, but in the anterior limb, the inside toe of one foot sometimes strikes the flexor tendons in passing, and causes in some cases extreme lameness.

The lameness from a suppurating corn frequently comes suddenly. Lameness may arise upon a journey from an excessive growth of horn upon the foot, and this result is the more likely to occur, if the horse has been idle and kept in the stable. The growth changes the relative position of the foot as a basis of support, and the lack of exercise and moisture renders the hoof rigid. Such a condition is likely to develop congestion of the laminae, and fissures of the wall. Such cases are not infrequent. In flat feet with prominent frogs, lameness is often developed when the shoe becomes worn, and this is the more likely to occur if the frog is permitted to get hard and inelastic from lack of moisture. Young and speedy

horses are frequently lamed by overwork in connection with maladjustment of the hoof in shoeing, and this condition is frequently produced in this manner. To prevent the animal interfering, the hoof is left the highest upon the inside, and this tilting of the foot is increased by the more rapid wear of the outside branch of the shoe. This position of the phalanges, puts great lateral strain upon the articulation, and the ligamentous structures suffer as a consequence. The first symptom will usually be a slight increase in size, a distention of the bursæ, sometimes a tendency of the fetlock joint to shoot forward, sometimes decided lameness, at others, to use the horseman's phrase, a 'tied up condition.' I wish to impress this condition and cause of it upon your mind, for many a fine young horse has been blistered, and fired, and tortured and ruined, when a cure might have been accomplished by rational treatment; a removal of the mechanical cause. Lameness may arise from arterial emboli, or a plugging of the larger artery of the extremity. In such a case, the animal is usually free from lameness while at rest, but a short drive brings excessive lameness and evident distress. The affected limb is usually cooler than its fellow. A rheumatic condition may cause lameness. This is often metastatic in character. Changes in the temperature affect the intensity of the symptoms. It is not infrequent as a complication or sequellæ to influenza. In the hock, we have a diseased condition known as chronic rheumatic arthritis, a disease in which there are slow destructive changes taking place in the articular cartilages, and synovial membranes, etc. The external signs of the condition are, an increase in amount of synovia osteophytes or bony growths about the articulation, and crackling and stiffness of the joints, as shown at the beginning of exercise. This condition is liable to assume occasionally a more violent form from excessive work, exposure and general abuse. In the young horse, it is sometimes difficult to differentiate between a fullness in the hock which is harmless, and a fullness which shall when put to hard work, speedily develop into the graver condition of which we have been speaking.

As connected with this subject of the diagnosis of the lameness we may here refer to the examination of horses for sound-

ness, in reference to this matter of lameness. As experts in all that pertains to veterinary science, you will be called on to examine horses for soundness and also to assist the purchaser in his selection. For these reasons you must endeavor to acquire an intimate knowledge of horses. You should understand the best method of feeding, watering, and their general care in the stable and on the road, the best plans to correct vicious habits, etc. You should become familiar with the different classes of horses, their general external outlines, those best adapted for agricultural purposes, for trucking, for the lighter service of grocers, and for gentlemen's driving horses. You must observe the anatomical arrangement of bone and muscle which fits the animal for the particular service required of him. By such accurate observation and by such knowledge as I have indicated you qualify yourselves to be of invaluable service to the horse-owning community which may secure your services. You will get an idea of the variety of subjects with which the veterinary surgeon is expected to be familiar by the perusal of the veterinary column of some sporting or agricultural paper. When called to examine a horse you must remember that your professional reputation is to be tested. You must have all your senses alert, allow nothing to escape your notice, spare no effort, no pains to discover defects if they exist. To particularize—If called to a stable to examine the animal, try and see the horse before he has been moved and notice the position he is in. The resting or pointing of a forward foot is always suspicious. Stand directly behind the horse and have him moved from side to side in the stall. When the horse is first backed from the stall, if you suspect lameness in the forward extremity, have the horse turned around sharply toward the suspected leg. It is customary at this stage to go through a minute examination of every part of the anatomy, including the nature of the pulse and the condition of the thoracic organs as revealed by auscultation and percussion. The examiner notes all defects in form and diseased conditions, and keeping them in mind the animal is put in motion.

If disease of the hock or navicular arthritis is suspected it is best to put the animal at once upon the trot without any preliminary warning at the walk. The difference between sound-

ness and a slight unsoundness is not easy to describe. The sound-footed horse moves with a bold, even stride; the weight is thrown upon the foot, without any apparent effort to lessen the concussion, but when there is tenderness in the foot or limb, the stride becomes less bold, there is an occasional stumble, and the neck and foreshoulder are held slightly rigid in an effort to lessen the shock of striking the ground. As disease advances, the rigidity in the muscles of the neck and shoulders becomes more marked and the countenance bears a troubled expression. The incipient stages of lameness can only be detected by constant and close observation.

There are some forms of lameness that are only apparent after the animal has been driven for some distance, so that it is well unless you have previous knowledge of the animal to have him driven. In some cases when the animal is hurried beyond a certain gait a "hitch" will be shown, referable in many cases to a stiffness of the hock. In animals when an external appearance of the foot, or its position, leads you to suspect a diseased condition of the feet, or when the form or appearance of the hock leads you to suspect disease in that region, yet in neither case has lameness been shown from these tests, it is well to give the animal some fast work and warm him up well, then, after standing until well cooled, notice how the first few steps are taken.

To determine the relative sensitiveness of the different portions of the foot, the hoof-searching forceps, or the smith's pincers answer a good purpose, and if we are acquainted with the normal condition of the plantar horn, the removal of the shoe and its examination, are useful in giving data on which to form an opinion as to the future usefulness of the animal. In this connection I might allude to the fact that there are many plans adopted by unscrupulous dealers to conceal from the purchaser lameness or defects in the animals. I will mention some, not as exhausting the subject, but to put you on your guard. When a horse shows lameness only during the first few steps, he is handled roughly in the stall in an endeavor to excite him, and when backed out is started suddenly into a run to conceal the defect. The whip, as you will see

it applied, has at least a three-fold object. It shows the animal at his best. It conceals the small aches or pains, which, under other and quieter surroundings, he would remember and indicate. It inspires him with fear, which will for the time hold in check the manifestation of viciousness which he might otherwise display to the disadvantage of the seller. Again when the horse is led out of the stable for inspection, the man who holds the halter will keep the animal in motion and elevate the head. His object in this is to keep the horse from pointing. The head is often checked up extremely high, the constant irritation preventing the horse showing a slight lameness.

A lesser defect is often made to conceal a greater, as when there is navicular or some chronic disease of the foot, an accidental injury, such as being wounded by a nail in shoeing, or by picking one up in the street, is made prominent as the cause of lameness. Another point in connection with the driving I might mention is, that the animal is kept well up to the bit, and it is constantly moved in the mouth to irritate and attract the horse's attention from a sensitive foot.

In regard to these last remarks. As we before stated we do not exhaust the subject, we mention these to incite caution. This subject of lameness is a large one and we have treated it in this general way to stimulate your interest and lead you to investigate for yourselves. Some of the diseased conditions we have simply named, in others we have touched upon the cause. The diseased condition, known as Navicular Arthritis, Laminitis, etc., will each require to be separately treated upon.

EDITORIAL DEPARTMENT.

GLANDERS.

THIS formidable disease has been prevalent lately among the horses throughout the State of Illinois with disastrous results, the contagion extending in many instances with fatality to human life.

Dr. N. H. Paaren, State Veterinarian, having been specially commissioned under the authority of the Illinois State Board of Health, to visit the infected localities and institute measures for the suppression of the disease, acted promptly and energetically, doing all in his power to check its extension.

He was resisted, however, in the performance of his duty, it being claimed that he was exercising power not granted him by law in killing the animals affected.

It will be remembered that the Illinois General Assembly in one of its sessions, in consideration of the efforts made under the authority of the Board of Health, amended the so-called "Pleuro-Pneumonia Act" by making its provisions apply also to Glanders. This law declares that horses afflicted with glanders may be slaughtered, whether in an infected district or not, or whether an epidemic exists or not, but in all such cases the surgeon must be backed by the order of at least one of the consulting, or veterinary, or practicing physicians.

The attorneys of the owners contended that Dr. Paaren could not resort to the extreme measure of slaughtering the affected animals until the Governor had issued a proclamation declaring the glanders epidemic. Now, according to the opinion expressed by the Attorney-General, the law requires the proclamation of the Governor to the effect that a district is infected with glanders necessary to the enforcement of quarantine, but as regards authority to slaughter no such proclamation is necessary, only the endorsement by other physicians. If, therefore, Dr. Paaren had such endorsement his action in the matter was perfectly legal.

The Illinois Legislature is to be commended for putting in force the power of the State to prevent the spread of infectious diseases, not only from a financial, but from a humanitarian point of view, since thereby are saved a number of valuable animals, much suffering prevented, both in man and animals, and many human lives preserved. It is to be hoped that the other States in which the disease exists will not be slow to follow the example herein given.

U. S. VETERINARY SURGEONS AND THE R. C. V. S.—We take pleasure in calling the attention of Veterinary Surgeons to the motion carried by Professor Walley at one of the meetings of the Council of the R. C. V. Surgeons admitting foreign veterinary surgeons into the college to study for a Diploma by attending only one winter and one summer session, and passing only in the subjects of the final examination.

Following are the extracts :

PROFESSOR WALLEY then moved "that the latter part of By-law 46 read thus :—" A student holding a foreign or colonial veterinary diploma from any veterinary examining body recognized by the Council of the Royal College of Veterinary Surgeons shall be exempt from attendance on the course of lectures for the first two years and from the examinations at the end of those years respectively.

Professor Williams seconded and the President supported the motion, which was agreed to.

At a special meeting later Mr. DRAY proposed that the alteration in one of the By-laws, proposed by Prof. Walley at the last meeting and carried, be confirmed.

Mr. WRAGG seconded the motion.

GENERAL SIR FREDERIC FITZWYGRAM moved as an amendment, "That the alteration be not confirmed." He considered that it would be a step in the wrong direction altogether. Some years ago the Council compelled all students to attend a whole course of lectures and examinations. Since then he himself had proposed to relax that rule and to allow qualified men to prove that they were qualified, without attending the lectures. Any further relaxation of the rule would, in his opinion, be injurious to the best interests of the college and to the qualification of the students.

The PRESIDENT said that, according to the unaltered by-law, any gentleman who was a graduate of a foreign or colonial school was admitted to the first and second year's examinations without attendance on lectures, the alteration would exempt them from all attendance on lectures and from the examinations at the end of those years. They would, however, have to study and to pass in Class 6. He (the President) supported the alteration, because he thought it unfair to a gentleman who had studied

in a foreign school coming up in the M. B. subjects that he should be examined without having gone through the course of instruction. He had also in his mind that distinguished members of the profession holding foreign or colonial diplomas might come up for examination, and it would be very hard upon them to have to be examined in very elementary subjects.

The amendment not being seconded, the resolution was put and carried

THE NEW YORK CATTLE QUARANTINE.—The United States Government has bought forty acres of land at Garfield, New Jersey, having in view the establishment of a quarantine station to which all foreign cattle arriving in the port of New are taken.

The *Country Gentleman* gives the following particulars :

If the animals are found suffering from any fatal contagious disease, as lung plague, rinderpest, or apthous fever, they must not be admitted to the regular quarantine, but quarantined elsewhere. The cattle seemingly free from all infectious diseases are taken to the Garfield grounds with great care, every precaution being taken to avoid any risks of spreading a disease. Only cattle arriving by the same ship may be quarantined in the same yard, and the rules require that all gates of yards shall be kept locked when cattle are entering or leaving the quarantine grounds. A veterinary inspector has general supervision and reports to the Treasury Cattle Commission the appearance of any contagious disease. As a further precaution the manure is quarantined for three months after the cattle have served their ninety days and then removed from the grounds."

The government has devised, and no doubt will put into execution, a plan for the prevention of the spread of contagious diseases among cattle, the importance of which no one will deny.

We would suggest in the matter that not only the infected animals, but also the men who have been in contact with them be subjected to quarantine regulations.

INOCULATION FOR PLEURO-PNEUMONIA.—Dr. Ezra M. Hunt, Secretary of the State Board of Health of New Jersey, induced the Legislature to permit inoculation for pleuro-pneumonia under certain restrictions.

The Board proposed the inoculation as a settled principle approved by such eminent authorities as Willems of Belgium, Rutherford of Edinburgh, and Fleming of London, the opinion of these gentlemen being that when properly performed inoculation could not communicate the disease.

The results so far tend to prove the value of inoculation as affording immunity against the propagation of the infection.

SANDERS' MISSION.—We record with pleasure the return of Mr. J. H. Sanders, of Chicago, who, as our readers will remember, was sent to Europe on a special mission in the interest of live stock, and tender him our congratulations on the successful result of his labors.

HOW THE GASTRIC JUICE OF THE HORSE'S STOMACH IS SECRETED.—Drs. Ellenberger and Von Hofmeister have been making some very elaborate investigations into the physiology of a stomach digestion in the horse. Some of their conclusions we have already published. In the *Archiv für wissenschaftliche a practische Thierheilkunde* the final conclusions from their studies are given and we present them below.

First—The horse's stomach, which is comparatively small (holding about fifteen quarts), is divided into the Proventriculus which has no glands and the glandular stomach proper. The glandular stomach is filled with little pouches or follicles, and these are of two kinds, the mucous follicles or glands which secrete mucous and the peptic follicles or glands which secrete pepsin.

The entire stomach wall is very rich in elastic tissue, and this tissue surrounds even the glands themselves. There are nerve-ganglia in the stomach wall in its muscular and sub-mucous coats.

Second—The so-called peptic glands are lined at their entrance with the cuboidal epithelial cells continued from the coating of the stomach. Within the glands or follicles themselves are two kinds of cells, the "chief-cell" (Hauptzell) and the "border-cell" (Belagzell). The latter is larger and seems to fill up the follicle like apples in a long bag.

Third—There is, besides in the horse, a third "wandering-cell" which seems to be in character and form between the two just mentioned. This cell has not been described as occurring in the dog's stomach.

Fourth—The glands in the pyloric part of the stomach which are generally thought to be mucous in function are lined

with one kind of cell only which does not (as in man) resemble the "chief cells" in the peptic glands, but seem to be simply continuations of the epithelium lining the inner surface of the stomach. They are a little larger and granular.

Fifth—The surface epithelium and that lining the ducts of the glands secretes mucous.

Sixth—There are no lymph-follicles present in the stomach wall. But adenoid tissue exists, and the lymphatics are numerous.

Seventh—The portion of the stomach in which the pepsin is secreted is small, but very thick, and it possesses long follicles with unusually narrow ducts.

Eighth—The pyloric part of the stomach secretes no pepsin, or very little. (In this differing from the stomach of the dog.)

Ninth—The peptic glandular membrane secretes a great deal of pepsin, chiefly in its deeper parts.

There seems to be plenty of pepsin in the horse's stomach all the time, whether the organ be at rest or work. In this respect it also differs from the stomach of the dog and probably of man.

THE TUBERCLE-BACILLUS IN HENS.—Dr. Ribbert, of Bonn, finds that tuberculosis sometimes attacks hens, and that the disease may even become epidemic in a flock.

He states in the *Deutsche Medicine, Wochenschrift* that the bacilli of tuberculosis are invariably to be found chiefly in the intestinal wall, spleen and liver. He further asserts as the result of his experiments that the bacilli are distributed chiefly through the virus and are to be seen in large numbers about venous walls.

A flock of hens suffering from tubercular disease can not be a very safe addition to a farm-yard.

THE ATTENTION of our readers is called to the article on Comparative Menstruation by Alfred Wiltshire, M.D. It is only very recently that human physicians and scientists have turned their attention and researches to the development and study of comparative science.

The article which we have reprinted from the *Veterinary*

Journal is carefully and thoroughly worked up and illustrates the kind and character of the work that is being done by those interested in the laws of life and development as manifested in the lower animals.

Dr. Wiltshire is recognized as an authority, and his views upon so interesting a subject as the Physiology of Menstruation should command attention notwithstanding that they may seem to some to conflict with the traditional orders on this subject. Contributions of a similar character on any subject by those competent to write them will always find space in our original department.

STATE VETERINARY ASSOCIATION.—We are reliably informed that a call is soon to be issued for a "State Veterinary Association." Mr. T. E. Daniels, proprietor of the *United States Veterinary Journal*, has been actively engaged during the last seven months in organizing State veterinary associations in various sections of the country. The movement began in Chicago and resulted in the formation of the Illinois State Veterinary Association. Associations have since been organized in Michigan, Wisconsin, Ohio, Indiana, Iowa and Pennsylvania. Considerable interest has been manifested and some good work done with the promise of greater results in the near future. The organization of the New York State Veterinarians into an association of a similar character will probably terminate his efforts in this direction for the present. Organizations like the one proposed are productive of much good. We need more unity of action, greater fraternity of feeling and much less jealousy and acrimony than the various cliques of the veterinary profession manifest at the present time. Our members are being yearly increased by the addition of excellent material in the shape of graduates from our flourishing colleges and it is eminently proper that they should early become interested in the character of each other as well as the future advancement of the science of comparative medicine. We earnestly urge every graduated veterinarian to give his personal influence and presence to the support of the measure. The right kind of work in the beginning will insure success and make the veter-

inary profession of this State what it ought to be—a united, influential body of intelligent men.

THE NEW HARVARD VETERINARY SCHOOL.—A writer in the *Boston Medical and Surgical Journal*, has taken the trouble to “write up” the new Veterinary College connected with Harvard University. Everything is naturally viewed in a very rosy light, and we are led to suppose that the Boston school will at once take the lead of all veterinary colleges. Some exhibition of local pride is of course to be expected ; but it was hardly necessary in thus “touting” Harvard to speak slightly and ignorantly of the New York institutions.

Those acquainted with the workings of Columbia Veterinary College, for example, know that it requires a longer term than other New York Veterinary Colleges, that evidence of preliminary education is demanded, and that no school in this country does or can give its students so thorough a drill in all the fundamental branches of comparative medicine. Boston may have a magnificent hospital (with accommodations for eleven horses), but the students of the Columbia College have access to six.

Harvard has no doubt a fine school, but it is young, and those connected with it will learn in time that building horse-hospitals and drawing up finely worded circulars, do not start a veterinary college.

For one thing it is not easy to get good teachers and New York has had to educate hers. Boston will be able to do so in time.

Columbia Veterinary College has been the centre for several years of sincere earnest work in comparative pathology and physiology, and it deserves some credit and recognition of the fact. This the hasty and exuberant correspondent of the *Boston Medical and Surgical Journal*, fails to give.

CASE DEPARTMENT.

I.—EXTENSIVE CYSTIC DISEASE OF THE LIVER IN A PIG.

BY WM. OSLER, M.D.

My attention was directed by the inspector of one of the city abattoirs to the liver of a hog which had been killed a day or two previous. The entire organ was occupied by simple cysts varying in size from a marble to an orange, uniformly distributed through the substance and filled with a clear fluid. At the edges and between the cysts portions of hepatic tissue, of a deep olive green color, could be seen. The organ was enormously enlarged and weighed forty pounds, about ten times the normal weight. Unfortunately the health officer had given orders for the specimen to be kept until the next meeting of the health committee, and when available was too decomposed for further dissection.

General cystic disease of the liver is a rare affection. In man very few cases of it are on record, and one or two of these have been associated with cystic kidneys. (Wilks Path. Soc. Trans. vol. vii.) The mode of origin is unknown; possibly in both liver and kidney the condition is always congenital. The hog in this case was fairly nourished, but presented great abdominal distension.

MCGILL COLLEGE, MONTREAL.

II.—FRACTURE OF OS SUFFRAGINIS WITH COMPLETE RECOVERY.

BY E. LOVELL, V.S.

On January 17, 1888, I was telegraphed, "to come and see a young trotting mare that ran away and broke her leg." On examination I found the os suffraginis fractured, but no external wound.

History of the Case.—She had been tied at a door; got frightened; broke loose, ran away, slipped and fell, her right forward foot slipped under the stone coping of sidewalk, and her struggles to get up resulted in above fracture.

Treatment.—Assisted by J. Collinson, M.D., C.M., I applied a glue bandage, and, as she was in a very plethoric condition, gave her a brisk cathartic.

Aloes. Barb.,	- - - - -	3vii
Hydrargi. Subchlorid,	- - - - -	3i
G. Radix, Po	- - - - -	3ii
Sap. Molis, q. s. to form Ball.		
Sig. at once.		

Emptied rectum by hand and used enema of soap and water. Ordered tinct. Aconitum Ms. xv every two hours until cathartic operated. Diet to consist of bran mash, carrots, etc., etc. On leaving, gave instructions to keep leg perfectly quiet till bandage had thoroughly dried, as they were unwilling to go to the expense of slinging her. On Feb. 27th I was telegraphed to come and see her again, as they thought they could take her home (some ten miles from where the accident occurred.) Found her walking around the box stall to all appearance well, but did not consider it advisable to allow them to do so. She remained another week, went home and has been doing fast work since.

POTSDAM, N. Y.

III HEPATITIS IN A DOG.

BY MARK L. FREY, D.V.S.

On the 8th of June I was called to see a dog—the history of the case being as follows :

The owner noticed that the animal appeared dull and restless, that he had a high fever, continually panting and that he had vomited twice during the day.

Upon careful examination I found the above symptoms to be correct with also a slight tenderness in the right side of the abdomen and bowels constipated.

I at first mistook it for enteritis, but after carefully watching the patient I noticed that the symptoms, though not very unlike, were less severe and with less prostration of strength.

I was now at a loss as to the nature of the trouble and asked the owner to note all the symptoms he noticed, and that I would call the next day. I, however, prescribed

R

Pil. Hydrarg. et,
Aloes Barb. aa, 3ii
Fiat massa in pil vi dividend.
Equibus donantur, binæ nocte.

And also recommended that the animal be bathed in warm water two or three times a day.

The following morning the symptoms of the previous day were more severe and prominent, the urine was of a deep yellow color, the skin appeared to be likewise universally tinged, but the coverings of the eyes and mouth more particularly so. I then arrived at the conclusion that the dog was suffering from Hepatitis.

The pills were continued until that night, when I considered the bowels well open ; after which I prescribed the following, to be given every four hours :

R

Pulv. Digitalis,	gr. viii.
Pulv. Antimonialis	gr. xvi.
Potassæ Nitrat, P.	-) i
Misce.	

And divide into twelve powders. A blister was also applied to the right side of the abdomen.

This treatment was carefully carried out and on the fifth day the animal was discharged cured.

NEW YORK CITY.

CASES REPORTED BY WILLIAM HERBERT LOWE, D.V. S., FROM DR. MUSTOE'S WILLIAMSBURGH VETERINARY INFIRMARY.

IV.—THE SUPERIOR PORTION OF THE OS PEDIS REMOVED FROM A DISEASED FOOT, AND THE HORSE SERVICEABLE FOR TWO YEARS AFTER THE OPERATION.

The subject was a large iron gray gelding, *æt* eight years; the property of the Waterbury Cordage Co., of Brooklyn. Two years ago this horse suffered from a punctured wound in the near hind foot, caused by the animal stepping on a nail. The horse was treated by Dr. J. F. Mustoe. The orifice of the wound was enlarged and the usual antiseptic and astringent therapeutic measures employed. Suppuration set in and under ran the frog and a large portion of the sole, which parts were removed. Soon symptoms of necrosed bone developed which lead to the belief that a portion of the bone would have to be removed. A large portion of the bone did become detached and was removed from the plantar surface near the frog. On examination the piece proved to be the entire superior portion of the os pedis.

The possibility of this portion of the bone coming away can be readily understood, but how the animal could recover and be of service for two years after the operation, is much harder to account for. It is a pathological fact that horses are more disposed to develop abnormal bony growths than other animals. The exostosis of spavins, splints, ringbones, etc., in the horse are illustrative of this peculiar diathesis in the equine patient.

In this case a bony deposit took place all around the pastern in the seat of ringbone. Ankylosis must have taken place at the first and second phalangeal articulations, but where did the tendon of the extensor pedis muscle insert itself. The horse was sold to a farmer and although he had a club-foot, yet, as stated above, he was serviceable for two years when he contracted Glanders and was destroyed. We regret in not hearing of the animal's death until several weeks after it

had occurred as we wished to prepare a pathological specimen of this foot for the Museum of the Columbia Veterinary College. The portion of bone which came away during life is now in Dr. Mustoe's cabinet. We would be pleased to have the views that other veterinarians may hold, advanced as to the anatomical and pathological changes that took place in the various tissues of the foot in question.

V.—TYMPANITIS TERMINATING IN RUPTURE OF THE STOMACH.

A mare, the property of Cross, Austin & Co., of Brooklyn, was brought to the Williamsburgh Veterinary Infirmary, on the evening of September 10th, suffering from a severe attack of tympanitis. No history was obtainable except that the mare had been sick for about three hours and that no medicine of any kind had been given. The animal was put at once in a spacious box-stall. Vulvitis as well as tympanitis was present. A diagnostic symptom showed itself at once—a regurgitation of food, first from the nostrils and afterwards from the mouth and other symptoms to justify the diagnosis of rupture of the stomach caused by the excessive gases generated not being neutralized.

Unfavorable prognosis given.

Treatment.—The regurgitation of food having taken place, paracentesis abdominalis was not performed as it otherwise would have been. Anodynes were exhibited, also remedies to neutralize the gases. Attended patient all night and succeeded in overcoming all the tympanitic symptoms and the vulvitis. Death occurred the following morning at about 10 o'clock.

Autopsy was made shortly after death which sustained the diagnosis. On opening the abdominal cavity partially digested oats and other ingesta were found among the viscera; no lesions in the thoracic cavity. Diaphragm in normal condition.

VI.—REMOVAL OF A CYST FROM THE INFERIOR CERVICAL REGION OF A POINTER.

The patient was a valuable Pointer; the property of Edmund Orgill, Esq., of Brooklyn. About a year ago a large cyst developed itself in the inferior cervical region. This cyst was enucleated by Dr. J. F. Mustoe. When opened there escaped a peculiar dark, thick, mucilaginous fluid. The opposing edges of the integument being brought together sutures were put in and the wound healed up rapidly. About six months afterwards an enlargement appeared in the same region, and at the request of Mr. Orgill, the dog was operated upon again. This time the fluid was allowed to escape and a seton was passed through the cyst. The usual antiseptic treatment was adopted and the animal was well again in due time. The cyst developed the third time. The dog being a favorite with the owner, another operation was performed.

A longitudinal incision was made and the fluid allowed to escape which was

of the same character as the first. A considerable portion of the skin of either side was removed and the edges of the opposing integument brought together and secured by sutures. The wound healed up rapidly. Dog was sent to the country. No sign of its re-development.

Obituary.

THE LATE MISS DICK.—The death at Burntisland on the evening of Saturday last, at the advanced age of 92, of Miss Mary Dick, sister of the late Professor Dick, founder of the Edinburgh Veterinary College, is an event of some public interest both retrospectively and prospectively. She was intimately associated with her brother in founding and endowing the College, and since his death in 1866, when the management was transferred to the Town Council of Edinburgh, Miss Dick has continued to take the warmest interest in the prosperity of the institution. Under her brother's will, Miss Dick had been constituted residuary legatee, and managed the Burntisland property personally. By her death a large annual revenue from house property and fees will be available for the service of the College, which henceforth may be expected to be placed on a far more satisfactory basis, and to offer still greater advantages for the cultivation of veterinary science.

Miss Dick was born June 1st. 1791 at Whitehorse Close, Edinburgh, where her father, who was a blacksmith, had a forge. Her reminiscences of old Edinburgh were very entertaining. She used to relate that she had been offered the perusal of several of Scott's novels yet only in MS., but had declined to read them both then and ever afterwards. This is doubtless to be explained by the fact that her political and ecclesiastical proclivities lay from the first in a direction diametrically opposed to those of Sir Walter Scott. At the age of twelve she crossed the Firth in an open boat to Kirkcaldy, paying 2s. for her passage, part of which consisted in being carried from the boat to the landing place on the boatman's shoulders. Through her brother she enjoyed a very extensive acquaintanceship both at home and abroad, which she kept up to the last, every day posting and receiving a considerable number of newspapers and correspondence bearing mainly on public questions. She was an ardent Liberal, and advocated female suffrage; greatly satirical on modern extravagance and effeminacy; boasting, for example, that she had never taken a walk for health in her life, and that she had never had a cough. Her funeral takes place to-morrow, when her remains will be interred in the Calton Burying-ground, Edinburgh.—*Scotsman*.

REVIEWS.

A TEXT BOOK OF THE PRACTICE OF EQUINE MEDICINE. By William Robertson, F.R.C.V.S., etc. London, Baillière, Tindall and Cox; New York, W. R. Jenkins. 1883.

Students and practitioners of veterinary medicine will hail with satisfaction the appearance of this important work, filling, as it does, a long felt want, namely, a practical, systematic, as well as scientific, and clearly written treatise on the Diseases of the Horse.

Of the eight hundred pages of which the book is composed, thirty are devoted to the consideration of the Theory of Medicine and the remainder to the Practice. This latter section is arranged in two divisions; in the one are described General and Constitutional Diseases, and in the other Local Diseases.

The chapter on Glanders, extending over fifty pages, is remarkably well written. Of its cause the author says: "For my own part, reasoning from analogy and the results of a comparatively limited experience, I have ever regarded the spontaneous origin of glanders in horses as very problematical.

"If capable of being originated *de novo* it is unlike the particular class, the specific communicable diseases to which it belongs, a class feature of which is that they are only capable of propagation by the reception in the healthy of the specific virus manufactured or proceeding from the diseased. Every case of glanders with which I have come in contact has been most reasonably accounted for on the theory of infection or inoculation; in the majority they have been easily and directly traceable to the source."

In the treatment he insists especially on the importance of sanitary measures, thus: "When we consider the fatal nature of this disease and its acknowledged contagiousness in every form of its development, the great pecuniary loss entailed upon the community by its existence and distribution, not to mention the more serious danger to human life, the importance of well-considered and energetically carried out preventive and suppressive measures becomes obvious to all but the most thoughtless and ignorant. Until, however, veterinary medicine is duly recognized and takes its proper place in that conservable section of 'social science,' public health, we can scarcely expect that executive measures sufficiently comprehensive to satisfy even our present knowledge will be adopted and carried out."

The chapters on Influenza, Anthrax and Intestinal diseases are equally worthy of attention.

We hope to see the book very soon in the hands of every veterinarian in this country and highly appreciated as it truly deserves.

Mr. WILLIAM R. JENKINS, of New York, who has just returned from Europe, concluded, while there, arrangements for the publication in America of a number of important veterinary works just issued or shortly to be published. Among these works are Prof. Robertson's "Practice of Equine Medicine," and George Fleming's "Operative Veterinary Surgery," both large and important works, whose authors stand in the very front rank of the veterinary profession. He will also republish here a number of pamphlets on veterinary subjects at the uniform price of 25 cents; which will discuss topics of particular interest to veterinarians, sanitarians, and the medical profession generally.

Arrangements were also made for new editions of Prof. William's standard works on *Veterinary Medicine* and *Veterinary Surgery* on such terms that the American price hereafter will be \$7.50 per volume instead of \$10.00.

BOOKS AND PAMPHLETS RECEIVED.

STUDIES FROM THE BIOLOGICAL LABORATORY, edited by Newell Martin, M.A.D.Sc., M.D., and W. K. Brooks, Ph.D. Vol. II., No. 3. Johns Hopkins University, Baltimore. July, 1883.

OBSERVATIONS ON THE MANAGEMENT OF ENTERIC FEVER ACCORDING TO A PLAN BASED UPON THE SO-CALLED SPECIFIC TREATMENT, by James C. Wilson, M.D. Philadelphia, 1883.

ANNUAL ANNOUNCEMENT OF THE COLUMBIA VETERINARY COLLEGE. 1883—1884.

ANNUAL ANNOUNCEMENT OF THE AMERICAN VETERINARY COLLEGE. 1883—1884.

ANNUAL ANNOUNCEMENT OF THE CHICAGO VETERINARY COLLEGE. 1883—1884.

JOHNS HOPKINS UNIVERSITY CIRCULARS.

ANNALES ET BULLETIN DE LA SOCIÉTÉ DE MÉDECINE DE GAND.

THE POLYCLINIC. Published by P. Blakiston, Son & Co., Philadelphia.

JOURNALS.—La Clinica Veterinaria Milano.

The Veterinarian, London; The Veterinary Journal, London; Der Zoologische Garten, Frankfurt; Schweizerisches Archiv für Thierheilkunde, und Thierzucht, Bern. Archiv für Wissenschaftliche und Practische Thierheilkunde, Berlin; Journal de la Société contre L'Abus du Tabac, Paris; Tidskrift för Veterinar-Medicine och Husdjurskotsel utgifven af C. A. Lindqvist, Stockholm; Giornale di Anatomia, Fisiologia e Patologia, degli Animali, Pisa; Il Medico Veterinario, Torino; Kansas City Review of Science and Industry; Chicago Medical Journal and Examiner; The Medical Record, New York; The College and Clinical Record, Philadelphia; Annals of Anatomy and Surgery, Brooklyn; New England Medical Monthly, Sandy Hook; Chicago Medical Review; Virginia Medical Monthly, Richmond; Nashville Journal of Medicine and Surgery; The Southern Clinic, Richmond; The Western Medical Reporter, Chicago; Journal of Cutaneous and Venereal Diseases, New York; Denver Medical Times; The St. Joseph Medical Herald, San Francisco Western Lancet; The Weekly Medical Review, Chicago and St. Louis; The Blacksmith and Wheelwright, New York; National Live Stock Journal, Chicago; The Breeder's Gazette, Chicago; Cultivator and Country Gentleman, Albany; Indiana Farmer, Indianapolis; Truth, San Francisco; Weekly Drover's Journal, Chicago; The Chicago Tribune; The Medical Register, Philadelphia, Spirit of the Times, New York; United States Veterinary Journal Chicago; Horseshoer and Hardware Journal, Chicago.

Progress of Veterinary Science.

A NEW PARASITICIDE.—Guerin, (Th. de Paris 1882,) recommends naphthol as a parasiticide in *l'acariasse auriculaire* among dogs.

CATTLE LIABLE TO ABORT.—Dr. John Faust, V.S., in the *American Veterinary Review*, recommends the use of *viburnum prunifolium* for abortion in cattle. Dose—One-half drachm every day in cases of infection. Threatened abortion, same dose every hour or two as the case may require, and confine in large box stall.

ITCH IN THE CAT.—A correspondent of the *British Medical Journal*, Dr. John Reid, writes as follows regarding a case of "acarus" in a cat: "The cat in question, when seen for the first time (it being a stray cat), was greatly emaciated, and died on the following night (January 5th, 1883). The hair on one side of the face and neck, including the ear, was matted so as to resemble one large scab. The itch-insect and eggs were detected in large numbers. The cat's liver contained many abscesses of the size of a pin's head; the lungs, etc., appeared to be normal. Does the cat infect children, etc.? do these infect the cat? or is there mutual infection?"—*Medical Record*.

AMPUTATION OF PENIS.—The patient was a waler in a horse artillery battery, aged nine years, which had a very large barsatti growth on the end of the penis. It was about being destroyed, but as it was the best looking horse in the battery I determined to operate. Having cast and secured my patient, I detailed the salootrie to administer chloroform. I could not pass the catheter, for the growth surrounded the opening of the urethra completely, so I bound a piece of strong tape close to where I was going to make my first incision, and having entrusted this to the hand of a shoeing smith, I began work. I tried torsion on the vessels, but failed to stop hemorrhage, so I ligatured every one with silk. He did service afterwards in Afghanistan. —*Quarterly Journal of Veterinary Science in India*.

CHICKEN CHOLERA.—A chicken died on a farm at Gers last year of cholera, which had been epidemic there. It had laid several eggs before death which I submitted to incubation, marking them so as to distinguish them from others of the hatch. No difference could be detected between the marked and unmarked eggs until the circulation of the allantoïd commenced between the eighth and the tenth day of their embryonic development. At this stage the marked eggs ceased to progress. On opening we found on the surface of the allantoïd a lake of black blood, having an odor peculiar to the diseased fowl. The umbilical artery continued to pulsate for some time, showing that life is slow to become extinct in the embryo. The latter was found at the bottom of the amniotic pocket gorged with a large quantity of liquid, whilst all the albumen had disappeared. The blood was filled with bacteria and the amniotic fluid contained extremely small monads. It is evident that the eggs contained the germs of microbes with which the blood of the mother had been gorged and that these germs are not developed, but at the period of aërial respiration when the allantoïd has transmitted to the blood the necessary oxygen for the development of the bacteria. It is interesting to remark that it is only at this moment that the embryo really presents the character of the bird.

I made three chickens swallow the remains of these embryos and two have already succumbed. It is true that the disease still reigns on the farm and that other chickens are attacked.—*M. A. Barthélemy in Annales et Bulletin de la Société de Médecine de Gand*.

FRACTURE OF FEMUR IN A PUMA.—Mr. Henry Morris showed this specimen for Mr. Sutton of the Zoological Society's Gardens. The right thigh had been the seat of an old injury; the acetabulum was occupied by a mass of fibrous tissue; the femur was displaced, and the head of the bone was probably represented by a small bony mass attached to the ilium by ligaments, and still freely movable.

PNEUMOTHORAX IN A COATI.—This specimen came from the same source. The pleura presented the ordinary appearances of pneumothorax as seen in man. Another coati had recently died in the gardens from the same condition.

ACUTE FARCY IN MAN.—Mr. Howard Bendall (Birmingham) showed some microscopical sections, and read the notes of the case, which were briefly as follows: The patient, an adult male, was admitted into hospital suffering from an erysipelatous condition of the right foot, and from a number of swellings, varying in size from a pigeon's to a turkey's egg, scattered over the limbs. Two of these swellings, softer than others, were opened; and the pus evacuated was found to contain a considerable quantity of free oil. Three days later the characteristic pustular skin-eruption appeared, and there was nocturnal delirium. A couple of days later, some pus was seen in the sputum and there were physical signs of pneumonia at the left base. The dyspnoea, which was now evident, rapidly increased, and seemed to be out of all proportion to the physical signs. Two days later, a thin yellowish acid fluid commenced to exude from the nostrils. Eight days after admission he died comatose. The necropsy was made twenty-four hours after death. The blood was dark and fluid; but the right ventricle contained a large partially decolorized clot, which extended along the pulmonary arteries. The lower lobe of the left lung contained three abscesses, one of which had burst into a bronchus; the base of this lung was consolidated. Both lungs showed bronchitic changes. There was no ulceration of larynx, trachea, or bronchi. In the nasal cavity and on the roof of the mouth were numerous ulcers; these were covered, some with sloughs, others with a foul mucopurulent discharge. Some of the ulcers extended on to the fauces and pharynx. The spleen was enlarged and pulpy; but the other abdominal viscera were healthy. The left tunica vaginalis was obliterated by adhesive inflammation, and a few purulent points were seen on section of the testicle. Scattered throughout the muscles of the limbs, and more especially in the neighborhood of the joints, were large numbers of abscesses, containing sloughy blood-stained pus; in all, there were forty or fifty such abscesses. The skin of the chest and forehead was scattered over with small pustules; some of these had burst, leaving ulcers from one-eighth to one-fourth of an inch in diameter. Examination of microscopical sections of the lung from the neighborhood of the pneumonic nodules showed that the arterioles were more or less completely plugged with oil, which also enormously distended some of the capillary vessels. The mucous membrane of the hard palate had undergone intense disintegrative inflammation. In some regions, chiefly near the side or floor of the ulcers, granules of fat could be seen in clusters. The skin of the forehead in the region of the ulcers was in a similar condition. The sebaceous glands seemed to have undergone extensive fatty necrosis. Mr. Bendall pointed out that it was of great interest to notice the concurrence of this free oil in the abscesses, and of this curious form of fatty degeneration of the skin and mucous membrane, with the fat emboli in the lungs. Dyspnoea appeared to be an almost constant symptom in the latter stages of acute farcy, and might own this origin.—*British Medical Journal*.

SARCOMA IN A COMMON FOWL.—Malignant growth is probably common enough in birds, but as indubitable cases are not often described, the following account of the development of a sarcomatous tumor in the neck of a common hen may prove of interest.

The bird was hatched in the spring of 1880, and a year ago a swelling was first noticed growing from the neck immediately below the beak. This

growth, when I first saw it in January, 1883, was a little larger than a cricket ball; it was perfectly distinct from the crop, and freely moveable; it was very heavy, so that its weight prevented the bird from raising the head or flying from the ground; it weighed six ounces and three-quarters when removed. The skin adhered on the under surface on account of the irritation and hardening produced by contact with the earth. I removed it under chloroform on January 26th, and brought the wound together, which healed by first intention. During the week following, the bird gained seven ounces in weight, and soon recommenced laying eggs; this had stopped entirely during the year's growth of the tumor. About the middle of May she hatched a brood of healthy chickens produced from her own eggs. Two months after the removal of the growth the disease recurred in the scar, and the glands round became rapidly affected. Mr. Bowlby, of St. Bartholomew's Hospital, has been kind enough to make a microscopic examination of the part removed, and he says that "it consists of round cells, each about the size of a human red blood-corpuscle, without any definite cell-body, and somewhat granular. There was no appearance indicating an alveolar arrangement; but scattered irregularly amongst the cells was a little fibrillated tissue. There can be no doubt of the malignant nature of the growth, which seems to belong to the sarcomata rather than the true cancers or carcinomata."—*British Medical Journal*.

THE PRINCIPAL DISEASES OF THE HOCK.—At the May meeting of the Midland Counties Veterinary Association, Professor Walley delivered a lecture on the above subject. He remarked at the outset that the subject was of very great importance to those who examined horses for soundness, led to much controversy among Veterinarians, and therefore, thought it a proper one to be discussed. He went on to say that of all the diseases of the hock the so-called bone spavin was the most important, and he showed that the formation of bony deposits on the internal aspect of the joint was caused by the peculiar anatomical arrangement of the bones. But while he desired to point out particularly with reference to the formation of these bones the existence of a very marked predisposing cause for spavin, he mentioned hereditary predisposition as another very strong cause, remarking that of all animals with which they had to deal, the horse was the most predisposed to bony deposits and especially of the hock. He considered that one of the greatest predisposing causes of spavin was the peculiar manner in which the weight was thrown upon the small cuneiform bones of the inside of the hock, the articulation here differing very materially from that on the outside of the joint. The pathology of the disease was inflammation with exudation of bony matter. The chief symptom was lameness marked by a few peculiarities. The lameness disappeared with exercise; the horse was most lame on turning on the sound leg; the toe or shoe was worn more frequently on the outside than on the inside, caused by the animal endeavoring to throw the weight on the inside of the foot. Often no symptom presented itself and then a careful examination of the hock was necessary for the detection of spavin. He pointed out the rules observed in manipulating the joint for the purpose, and thought taking a mould of the hocks perfectly justifiable. There was a difference between spavin and what was known as coarse hock, and his rule in dealing with them was to contrast them one with the other and take all the bones and the age of the horse into consideration. If they found all the bones in keeping, and those perfectly free from lameness he thought they were justified in passing the animal sound; but, on the other hand, if they found one joint bigger than the other, even if the horse was apparently perfectly sound, they were not justified in passing him without a remark. Treatment—Counter-irritation; in firing always force the point of the iron into the bony structure.

The Professor next described the characteristics of occult spavin. Although the cause of this disease was somewhat doubtful, he attributed its origin to the peculiar motion of the joint and the consequent material interference with the blood supplying that region. In this form of the disease the lameness did not pass off with exercise. There was no enlargement of

the joint. The temperature was high and concussion caused pain. The treatment consisted in producing ankylosis which was not always easy to do. In gouty disease of the hock, to which heavy cart horses employed in town work were liable, he recommended a change of food and the external application of iodine. He next spoke of spavin and throughpin and the necessity of diagnosing between them. Curb he defined to be a thickening of the ligament sometimes caused by striking the joint. He mentioned a case in which a horse was refused the prize for the best stock getter because he had been fired and the official veterinary surgeon very properly refused to pass him, although the injury was due to an accident. The result proved that the veterinary surgeon was right, for afterwards twenty colts by the horse might have been found all with curby hocks.—*The Veterinarian*.

TREATMENT OF POLL EVIL.—Before pus is formed, and swelling is only apparent, I have found great benefit from applying a good strong iodine blister to the affected parts, together with the administration of a purgative. We are advised by eminent practitioners to first use cold water applications, *i. e.*, in the primary stage. I must admit I never think of cold water treatment in cases of this kind. My first thought is just what I have just stated—applying a good blister over the part and if necessary repeat it.

If we are sure pus is formed, we cannot open the abscess too soon by making a good free cut with the knife, and don't be afraid of using it. The cut must be made longitudinally, following up the sinus to the very end if possible, taking care not to cut a muscle transversely, as, by so doing, we get what too often follows these cases—*viz.* : poking of the nose.

After laying the sinus well open, we generally dress the wound with antiseptic or digestive liniment, at the same time using every means in our power not to allow the opening to heal at the top first. This is in a great measure obviated by packing the wound with fine tow, first steeped in the above mentioned liniment, and I am sure I need not tell you how difficult it is to keep the tow in the wound. I may state that in packing the wound we should be very careful especially if it is a very deep one. I have heard of a late Veterinary Surgeon, who was well known to nearly all present, having a case of this kind, and in packing the wound the horse happened to throw up his head, and in an instant he (the horse) was *non est*. In fact our veterinary had pithed him. I simply mention this to show how careful we ought to be in such cases. We often find it necessary to keep down the most external granulations by the application of caustic.

In conclusion, I must say I do not believe in injecting caustics into the sinuses without first free use of the knife. If caustics are injected we find structure destroyed we ought by all means to try and preserve, especially the "*ligamentum nuchæ*."

I forgot to mention earlier on that in one case we resorted to the old fashioned practice of setons, and I must say it answered remarkably well.

Since I wrote this paper, three months ago, I have had two more cases, which were treated as I have stated above, *i. e.*, by opening the wounds longitudinally and dressing with digestives. One of the two cases has quite recovered. The other we have under treatment at the present time, and is doing well.—*Mr. Küchen in the Veterinary Journal*.

TREATMENT OF QUITTERS.—There are two things necessary in order to ensure a satisfactory result in Quitters; the first is bottom your sinus or sinuses; don't be frightened. Secure your horse firmly in the stocks, then go to work, and, to use a vulgar phrase, make a clean sweep. I don't believe in the continual use of arsenic, bichloride of mercury, or any such sloughing agents; trace the sinuses with your probe, find out how they go and how many there are; then with the hot iron take the whole piece out *holus bolus*; after which treat as a common wound, and if a sinus should form again, take it out in the same way. No doubt you will think this very heroic treatment, but I ask those of you who have not tried it, to do so, and I think you will find it to answer in all cases.

I happened to be in Yorkshire a few months ago, when I met with a very old friend of mine, a Veterinary Surgeon, and in the course of our conversation, Quitters were mentioned.

My friend told me he had been treating a case with iodoform and with very good results. In fact the case got well. He simply wet the probe, then getting it charged with the pulv. iodoform applied it to the sinuses, and he told me it was surprising the effect it seemed to have on the parts. I simply mention this in passing; I have not tried it myself.

Now the second thing in the treatment of Quitters is this: don't be always probing and interfering with them. When you have thoroughly bottomed the sinuses, as before stated, and you are sure you have bottomed them, then leave the parts alone to nature.

We, as Veterinary Surgeons, interfere too much with our cases; we can't cure anything. We can only assist nature; but instead of assisting nature we retard her by our continual interference. I remember when a boy at home (which was not fifty years ago), my father had a mare with Quitters. The mare in question was attended to by a M.R.C.V.S. for some time, but without any apparent benefit. At last some old fellow turned up (I am sorry to say there are plenty of them, especially in country places), who undertook the case on the no-cure, no-pay system, and I assure you, in six weeks the mare was well. What he applied to the foot I don't know; it was a *liquia acca* or caustic of some sort. It is not what he applied to the wound that I wish to allude to, but the absolute rest he gave the parts afterwards, only coming to look at the mare once a week.

There is another thing I wish to mention before I close, and that is I don't believe in bandaging up Quitter wounds. If there is any pus forming, we prevent its escape, and, what is more, we keep from the wound one of the nicest and mildest astringents we have, viz.: atmosperic air.

I believe fifty per cent. of our Quitter cases if simply turned out to grass when it is seasonable, would recover of themselves.—*Mr. Kitchen in the Veterinary Journal.*

CANCER OF THE STOMACH.—The subject of this case was a grey troop horse, 12 years of age, which had for the past year frequently sufered from mild attacks of colic. These generally lasted from three to twelve hours. On the 21st of May, 1883, he was brought to the sick lines, showing symptoms of abdominal pain. An anti-spasmodic draught was administered and appeared to give relief for a time. During the following night the patient experienced an attack of Acute Congestion of the Lungs, for which he was treated with stimulants internally, and applications of mustard to the throat, course of trachea and chest. Towards morning of the 22d, he seemed relieved, but during the day suffered from high fever, the breathing became abdominal and labored and there was a frequent distressful cough. Pleuritic complications were now detectible, and the treatment modified accordingly, consisting principally of fomentations and the daily administration of salts of potash. On the 26th, with a view of improving the appetite, tonics were given in gruel and during the following three weeks the patient seemed to improve slowly. On the 20th of June I was enable to detect consolidation of the posterior end of each lung. The treatment being continued he gradually improved and was discharged relieved, on the 5th of July. On the 8th, being reported dull and off feed, he was re-admitted, and the case entered as one of Debility. On this date I again carefully examined him by means of a stethoscope and diagnosed emphysema of the superior part of both lungs; no sound whatever could be detected at the lower part of these organs; pulse regular but feeble; a most hard hacking cough was present, and the appetite very bad. Treatment: Tonics (vegetable and mineral alternated), general nursing and grazing daily. Remained much in the same state until the 9th of August, when he was recommended for casting. August 20th; had a slight attack of colic; an anti-spasmodic anodyne draught was administered which had the desired effect. September 1st; no improvement, lying down, appar-

ently free from pain, pulse 40 and very weak. The animal died at an early hour next morning.

Post Mortem Examination.—Intestines pallid, some gravel in the colon but no disease of its walls; liver, kidneys and spleen small. The posterior part of right lung consolidated and the upper margin emphysematous; the left lung fairly healthy. Both pericardial and plural sacs contained an abnormal amount of serous fluid; heart small and flabby. The coats of the stomach considerably thickened and diseased; total weight of the organ about seven pounds, specimen forwarded to V. S. J. H. Steel, for examination, who reports as follows:

"A very considerable portion of the lining membrane had undergone cancerous change, the villous portion being that mainly invaded. Throughout almost the whole of its extent it was thickened and broken up into cancerous masses or strings; the whole surface covered with soft fluid, carcinomatous material, distinguishable as such by its grumous character, and its component cells being evidently, *to the naked eye*, somewhat fusiform and inclined to adhere together in strings, formed by their overlapping one another at their ends. A thickened cancer discharge might be obtained by expression from cavities in the mucous membrane, which required to be cut open. One part of the villous membrane was so elevated as to form a semi-ovoid tumor, six inches by four extending in the long diameter of the organ. This elevated part did not seem to be invaded by the disease, but section showed that the tumor resulted from gelatinous deposit in the submucous tissue, which deposit, examined microscopically, was found to consist of round polynucleated carcinoma cells. In addition to the conditions hitherto mentioned, might be noted a strong band of cancer impregnated remnant of mucous membrane, forming a bridge connecting one side of the stomach with the other; also, here and there, small orange colored prominences, their color depending on small caps of rather degenerated epithelium covering them.—D. C. PALLIN, V. S., 14th Hussars.

REMARKS (by EDS.).—Apart from the advisability of placing on record every case of indubitable cancer in the horse, we desire to draw attention to the complete absence of symptoms sufficient to ensure precise diagnosis of the seat and nature of disorder. This is very frequently the case in diseases of the stomach. We may give the following case in illustration of the same point:

THICKENING OF THE VILLOUS MEMBRANE OF THE STOMACH.—B. M., 4 years old; admitted February 1873, suffering from progressive Asthenia. Since she joined the regiment six months before, it had been noticed that she did not thrive. She passed numerous nematode worms, and her bowels were irregular. No impairment of the appetite in spite of all efforts of the V. S. of the regiment, the debility so increased that on the 17th of April she lost all sensory power of the hind limbs, but only partially the motor power. Her breathing became labored and pulse imperceptible; she died early on April 18th. Autopsy showed lungs congested; liver congested but small; heart large and flabby; stomach with practically the whole of its villous portion of the mucous membrane in a state of hypertrophy, with complete obliteration of its gastric follicles, but enormous increase in its fibrous and epithelial elements; muscular coat of the viscus unusually vascular, and sending very large blood vessels into the neighboring mucous layer.—*Quarterly Journal of Vet. Science, India.*

NEWS AND MISCELLANY.

PERSONAL.—Prof. A. Llautard has been elected Corresponding and Honorary Member of the Société Vétérinaire d'Alsace-Lorraine.

B. H. Harrison, D.V.S., has been appointed by the President and Fellows of Harvard University, instructor in Anatomy in the Veterinary Department of that Institution.

Prof. William Osler, of McGill Medical College, Montreal, has been elected a Fellow of the Royal College of Physicians of London, England. Dr. Osler has held the chair of physiology in the above college for many years, and has done much good work in original investigation. He is at present general secretary of the Canada Medical Association. He is a young man yet, and is to be congratulated on the honor of attaining to the F.R.C.P., solely as the result of his scientific labors.

Dr. Robert Ward, F.R.C.V.S. of England, has been appointed State Veterinarian for Maryland. Dr. Ward brings to the position an extended experience and excellent credentials from those who have known him as a Fellow of the Royal College of Veterinary Surgeons.

A MODEST TRIBUTE TO PASTEUR.—The *Publicateur*, a journal published in the arrondissement of Meaux, contains the following poetical tribute to Pasteur: "M. Pasteur has the glory of being the first to bring knowledge out of mystery and make it irradiate through the Department of Seine-et-Marne; and every sheep which grazes upon the fields sings the glory of the master, and of science!"

TRICHINOSIS FROM EATING HORSE-FLESH.—Several Austrian journals report the case of a woman who suffered from trichinosis, caused, it is claimed, by eating horse-flesh. The subject is being investigated.—*Medical Record*.

A GIGANTIC ELEPHANT at the Schoenbrunn Imperial Menagerie, near Vienna, was poisoned April 5th by command. Fifty grams of prussic acid were administered to him, after which he died in less than eight minutes.—*Weekly Medical Review*.

THE DOMESTIC ANIMALS which annually fall victims to wolves in Russia are valued at about two and a half millions sterling. Besides this loss to the country, there must be taken into account the number of reindeer and other wild animals upon which the wolves prey. Lastly, there is a loss to human life, which cannot be accurately ascertained, but in one year 161 persons were known to have been killed by wolves.

THE SUPERIOR ORANG-OUTANG NOW IN LONDON.—The young orang-outang now lodged in the insect house at the Zoo is certainly in point of condition and health, the finest caged specimen ever seen. These creatures usually present a forlorn picture of extreme melancholy, and are generally only too visibly moping away before one's eyes, this even when kept in confinement in the congenial climate of the tropics. Our friend exhibits none of these traces of ill health or sadness, but has full rounded limbs, hair free from a suspicion of manginess, a bright eye, and a rollicking disposition, which can only be appeased by spells of tumbling.

Apart from the fact that this Simian comes from Sumatra where, although first discovered there, the species is far scarcer than in Borneo, it is remarkable that it has shed its teeth, and has acquired a new set. This dental evolution has never before taken place with a large ape in Europe.—*London World*.

BLINKERS.—The question has often been asked, "Why do horses wear blinkers?" We cannot answer the question. It seems to us that they are useless, ugly, and, to some extent, injurious to the eyesight. The most beautiful feature of the horse is its eye. If it were not "hid from our gaze," it would serve to denote sickness, pain, or pleasure. Many a time would a driver spare the whip on seeing the animal's imploring eye. The argument in favor of blinkers is, we believe, that horses are afraid of passing carriages. This objection, if valid, is of little weight, as such timidity would soon be overcome. We trust, now the cruel bearing rein has been cast aside, that blinkers will also be abandoned—a course which would, we feel assured, be attended with advantage to both man and horse.—*Lancet*.

CLOVER BLOAT.—An Iowa man says he has found the following a never-failing cure for clover-bloat: Take a large rope or stick (anything to keep the mouth open), insert it in the mouth, fasten over the horns in order to hold it in place. In fifteen minutes the bloat will have disappeared by the escape of gas from the open mouth. A Michigan farmer says that this peculiar disease, caused by eating green clover when wet with rain or dew, may be prevented by placing a quantity of either hay or straw in the field where stock may have ready access to the same, which they will readily resort to and which will absorb and neutralize the dangerous gases so that no harm will result. He also states that a very effective remedy for stock suffering from such cause is a cold-water bath plentifully applied by pouring over the backs, or where a stream or pool is at hand of sufficient depth to reach the animal's sides, they should be driven in at once, when the bloat will be immediately dissipated. The farmer with bloated cattle may take his choice of cures.—*Chicago Tribune*.

SHOEING A KICKING MULE OR HORSE.—My plan is to tie a three-quarter rope around the pastern of the foot I wish to shoe, then cross it over the back about the withers; run it through the ring of the bit on that side, then through the other ring of the bit; let the man holding the mule or horse grasp the rope bringing it together, and then draw the foot up to the position most convenient for the smith. If the animal wishes to kick, let him try it; but he will quickly find that it will not pay. If he struggles at first, the man holding the rope must not let go, or the work must be done all over again.—*Blacksmith & Wheelwright*.

REMOVAL OF DEAD ANIMALS IN THE CITY OF NEW YORK FOR THE YEAR ENDING MAY 1, 1883.—Horses, 6,354; cows, 187; steers, 21; calves, 816; sheep, 531; cats and dogs, 13,367; mules, 24; goats, 128; hogs, 21; colts, 23; snakes, 2; buffalo, 1; seal, 1; monkeys, 2.

Of the whole number of horses that died in the city in 1882, the Agents of the Society for the Prevention of Cruelty to Animals, killed 2,118.

DISEASED MEAT IN GLASGOW.—Through the imperfect system of meat inspection in Glasgow, the carcasses of sixty cows which had died of Anthrax, were sent to the dead meat market in that city and sold for food, having all passed the inspector. As yet, it seems that no fatal results have been known to arise from this unfortunate state of things, still these disclosures cannot but cause a widespread feeling of alarm and indignation among the general public.

THE BOSTON DOG DESTROYER.—During the mad dog scare of 1877, Dr. Watts was appointed a special policeman with power to arrest all vagrants in the shape of dogs found wandering about the city unlicensed or not wearing a collar. During that "dog catching" season, the genial doctor captured and killed 846 dogs found about the streets, belonging to nobody, and which no person would care to own. The success of the doctor's crusade against our dogs called forth very favorable comments from both officials and citizens, and the next season, 1878, it was considered advisable to continue the work of extermination. That year the total number captured and destroyed was 759, a decrease from the year previous of no inconsiderable

number. From that time the work has been continued from year to year by Dr. Watts, resulting as follows: 1879, 719 dogs destroyed; in 1880, 691; in 1881, 418; in 1882, 297. It will thus be seen that there has been a marked decrease in the number captured and killed from year to year, and that last year's "catch" was about one-fourth of the result of the first year. Dr. Watts explains this decrease by the fact that he has made extraordinary efforts toward the capture and extermination of all female cur dogs, and has rid the city of those pests to a very marked extent.

WHAT SHALL HE DO WITH THEM.—Dr. Al. Watts, of canine-capturing fame, is now decidedly in a dilemma. The other day he started out upon his annual raid upon friendless curs and succeeded in capturing 16 of them. These were taken to his repository and at the proper time fed upon prussic acid. Death resulted from this diet, and one night 16 cold carcasses lay stretched upon the floor of the repository awaiting the last sad funeral rites. Sixteen little graves had been dug in the fertilizing heaps of the Boston Fertilizer Company upon the dumps at the foot of A street, South Boston, by the sexton; but, alas! the solemn interments in the fertilizer heaps were interfered with by the stern hand of the Boston Board of Health. South Bostonites have long been bewailing the smells from the fertilizer heaps, and, as a slight relief, the board of health forbade the burial of the brutes. The genial doctor sought the assistance of Ward & Co., and other rendering establishments. But no helping hand was extended, for they were all afraid to take the remains because their employes might become poisoned from the prussic acid and perhaps their customers. They would take them if the dogs had been shot, but the doctor thinks that that method of destroying them is too cruel. At present Dr. Watts is in a "box," but it is understood that the board of health has made satisfactory arrangements for the disposal of the dead bodies.

THE CATTLE PLAGUE.—Statistics show that this terrible disease destroyed over 200,000 head of cattle in Europe between 1869 and 1871. In 1842 it killed 300,000 head in Egypt, and only died two years later for want of more cattle to destroy; and in 1865-66 it proved fatal to 500,000 head in Great Britain within eighteen months.

In countries where the infected cattle were promptly slaughtered, and all that had been with them promptly disinfected, it has been invariably extinguished at a trifling cost.

In the United States epidemics occurred near Philadelphia in 1884-81; in Louisiana in 1887-89, and in Northern New York, in 1825.

By way of prevention it is said that nothing succeeds better than thorough drainage, removal of the animals from dangerous inclosed valleys, rich river bottoms, etc., during the hot and dry season, keeping stock indoors until the dews have disappeared in the mornings, good steady dieting, the maintenance of a healthy action of the organs and skin and a general attention to sound hygienic principles.—*Drovers' Journal.*

DOMESTICATION OF THE HORSE.—M. Cornevin, discussing the earliest evidence of taming the horse, very pertinently sets out with the question, "What is a domestic animal?" and replies, "One that participates in the *domus*, submits itself to the domination of a master, to whom it renders its products or its services, reproduces in captivity, and gives birth to young, which become more and more submissive to control." The idea of domestication comports with that of property in some form. M. Cornevin, for reasons mentioned in his communication, places the time of the event in the bronze age contemporaneous with the bronze bit. The fact seems incontestable that the use of bronze was imported into Europe and Africa from the orient. M. Pietrement, in his work on the origin of the domestic horse, and, before him, M. Pictet, in his *Origines indo-européennes*, have proved that the Ayrans, of the central Asiatic plateau, utilized the horse at a time when Europe was in the stone age. In the

discussion which followed M. Cornevin's paper, M. Faure remarked, that while the bronze bit was good proof of the domestication of the horse, the latter may have been tamed long before bronze was known. Indeed, the Gauchos catch the wild horses with a simple lasso. Could not pre-historic man, after catching a horse by means of a lasso, like the Gauchos, have made a simple bridle of raw hide, and have managed the animal thereby?—*Bull. soc. anthropol. Lyon.*

MATERNAL IMPRESSION.—Dr. T. C. Poole, Mansfield, Texas (*Medical Brief*, June, 1888), reports the following case: On April 17th, his sow gave birth to eight fully developed pigs. Having by accident been present, noticed the ninth as it was expelled; from its peculiar shape and color, curiosity was aroused, and on examination it was found to have the appearance of an elephant. It was destitute of hair, having a proboscis, with dependent ears, two eyes behind upper two thirds of proboscis closely approximated, yet distinct, an abnormal superior maxillary with two or three large teeth, with a long, thin upper lip, with shape and color of an elephant. The sow's gestation lasts three months and twenty days. The impressions were made within five days after conception. On Christmas Day the male was with her; on the 28th of December a menagerie exhibited at our town, had an elephant staked about three hundred yards from lot where the sow was, and in full view. The case is, however, one of atavism, as the pig descended from the proboscidea, and this was a reversion to its early ancestors. While there is no essential improbability in the maternal impression theory, the explanation of the case as an atavism is much more probable.

DEATH FROM HYDROPHOBIA—FATAL RESULT OF THE SCRATCH OF A CAT.—Peter J. Byrnes, a lad of 16, died of hydrophobia at Fort Hamilton last month. About six weeks previous Byrnes was scratched by a cat over the left eye and on the back of the neck, and was slightly cut. The cat at the same time scratched a boy named Despard, aged 10 years. Byrnes lived with Mrs. Despard, and was a bright, intelligent youth. The cat was killed, and nothing further was thought of the matter. One evening Byrnes and the boy Despard were playing in a hammock in the yard of the house when Byrnes fell out of the hammock. He immediately became dizzy. He soon recovered, but complained of pains in the throat and jaws, and as night advanced he became delirious and violent, and had to be subdued by force. Dr. De Mund was called in and treated the sufferer for hydrophobia. The next morning Post Surgeon Vollum was called in consultation by Dr. De Mund, and he also pronounced the case one of hydrophobia. Dr. Vollum said that the rumor that hydrophobia could be caused by a cut from the claws of a cat was ridiculous. It was, however, a real case of hydrophobia, and from what he had heard he believed that the cat which attacked the boys had had a fight with a rabid dog, and that he had carried off some of the virus from the dog in his claws.

BLOOD POISONING IN THE LOWER VERTEBRATES.—It is a well-known fact that the teeth of animals which are innocent of any specific poisonous secretion may sometimes inflict an injury distinctly to be classed among "poisoned wounds," resulting in an unhealthy ulcer, for which the mechanical violence offered to the tissues is insufficient to account; or even in fatal contamination of the system. This, of course, arises from the inoculation of decomposed particles of food or other septic matter, adherent to the teeth; and is precisely analogous to the danger of a scratch or cut received in the dissecting-room, or *post-mortem* theatre. It may be mentioned, in passing, that this danger is far greater in conducting an examination of a body within forty-eight hours after death, especially with such as have died of certain inflammatory diseases, than in the ordinary course of dissecting as practised in medical schools, where the "subject" remains on the table for six weeks or two months. That the animals whose bite is liable to these after symptoms should usually be found among the carnivora, is only to be expected;

indeed, it has almost passed into a popular proverb that the teeth of a cat, fox, or rat which has fed on carrion are poisonous, though the simple pathology of the circumstances is not generally recognized. Commonly, a badly-inflamed wound, with more or less local complication, is the worst sequence, direct constitutional poisoning from the bite of an animal being rare. It does, however, sometimes come on as a secondary effect, owing to absorption of morbid products from the seat of injury into the circulation. Such creatures as venomous serpents, the heloderme, and those infected with hydrophobia, glanders, farcy, and other communicable diseases, are, of course, excluded from the present consideration.

One would hardly have imagined that a reptile, with its sluggish blood, low vitality, and tolerance of poison and injury, could be susceptible of acute systematic infection from this remote cause. Nevertheless, a case came under my notice the other day at the Zoölogical Gardens, which appeared to me to admit of no other explanation. A grass snake, which had been sent up as a variety on account of the depth and brilliancy of its yellow color, was being fed in a small box with a number of other colubrines, when one of its companions (probably *Leptodeira annulata*) laid hold of the frog which it had already half swallowed. The robber usually gets the best of it in such a state of affairs, and, having the outer grip, not unfrequently engulfs the legitimate captor as well as the prey. Poor matrix allowed its head to be drawn into the jaws of its despoiler before relinquishing the struggle for its quarry, but let go in time to get away with a scratch on the side of the neck. Shortly afterwards the keeper found it swollen and inflamed as though it had been submitted to the fangs of the hamadryad. The neck continued puffed up and the wound discharged matter for several days, during which the snake manifested great uneasiness. At the end of that time the swelling subsided, but the reptile became apparently paralyzed, and died about ten days after the reception of the injury. I could find no local lesion whatever to account for death.

There is nothing specially remarkable in the fact of a snake inoculating morbid material by its bite, particularly a non-constrictor, which has to depend upon its teeth alone for catching, holding, and slaying its victim, and accordingly buries them deep in the flesh, as the jaws "walk" over it laterally. Moreover, the formation of parts deprives such a creature of the facilities for cleansing its mouth, which most other animals possess. I have experienced one or two painful inflamed and ulcerated sores from the scratches of harmless serpents, possibly—not necessarily—resulting from this cause. It has been shown, too, of late that chemical compounds which may poison the blood when introduced into a vein, are generated in the saliva or mucus of the mouth, even in man, during violent excitement. But, remembering how slowly a reptile is affected by inoculation with the most virulent venom the circumstance of a snake's succumbing under the above conditions to be sufficiently extraordinary to place upon record.—*Field*.

REQUESTS TO THE DICK VETERINARY COLLEGE AND THE UNIVERSITY OF EDINBURGH.—Under the will of Miss Mary Dick, sister of the late Professor Dick, founder of the Edinburgh Veterinary College of that name, it is, we understand, provided, after the payment of £100 to the Society for the Benefit of Widows of Veterinary Surgeons and certain other legacies, that the residue of her estate, with the accumulations of the free income to be derived from the same, shall be held by the trustees of the testatrix until it amounts to £20,000, when it shall be divided into two equal portions, £10,000 being applied in the furtherance of veterinary science in connection with the Veterinary College in Clyde Street, and the other £10,000 in the founding of a Professorship, either of comparative anatomy or of surgical anatomy, whichever of these Chairs her trustees shall consider to be most required in the interest of medical science, in the University of Edinburgh, "in memory of the late Dr. John Barclay and the late Professor John Goodsir," the testatrix adding that she was "led to found this Professorship in memory of these gentlemen, in respect of the great regard that my late brother entertained for them, and that they, I believe, entertained for

him." While declaring that the period of accumulation shall not exceed twenty-one years from the date of her death, the testatrix provides that in the event of the £20,000 being reached before the expiry of that period, her trustees shall have full power, after making the division, to continue to hold both or either £10,000 for twenty-one years, and until such an amount is accumulated as may be, in the opinion of her trustees, for the most advantageous promotion of the objects contemplated. In a codicil to her will the testatrix states that she had erected certain houses at the Kirkton, Burntisland, on the property belonging to her brother's trustees, and life-rented by her at a total cost of £800; but she had not then got any title to the ground on which the houses were built; and, in the event of her death before getting such title, and the same thus falling to her late brother's trustees, the sum of £800 more shall be employed by her trustees in the furtherance of comparative anatomy and surgery than in the furtherance of veterinary science. Of the trustees under the will, Professor Turner, Professor Chiene, and Professor M'Kendrick (Glasgow) are declared by the testatrix to have been appointed "in consequence of their special qualifications to carry out" her wishes "in regard to the disposal of the residue" of her estate.—*Scotman*, Aug. 7th, 1883.

MOORE TOPS FOR STABLE BEDDING.—All who are interested in the care of horses and cattle have long recognized the importance of maintaining the condition of the stables in accordance with the dictates of the highest sanitary rules as regards ventilation, drainage, etc. Bedding especially deserves attention, and the question arises, what material will supply the best, most comfortable, and most economical. Sawdust and tanbark are troublesome and expensive, while straw is cumbersome and a poor absorbent. "Peat-moss" is excellent, but a still better and cheaper substitute for all these is the material furnished by the Litter of Health Co., called "Litter of Health Moore Tops."

CITY HORSE-RAILWAYS.—There are in the United States and Canada 415 street-railways, giving employment to about 85,000 men, 18,000 cars, and 100,000 horses in daily use. These horses consume 150,000 tons of hay, and 111,000,000 bushels of grain. 3,000 miles of track represent an invested capital of \$150,000,000. The number of passengers annually carried is 1,212,460,000. In the city of New York there are 110 miles of horse-railway, and 11,866 horses are used to operate them. The horses, together with their harness, expensive lands and stables, feed and grains, make the operating expenses, by including interest, \$5,104,596.79 per annum. The average life of the street-car horse in New York is less than three years.

RUBBING THE TAIL.—Rubbing the tail is frequently induced by the presence, within the anus, of a species of intestinal parasite known as ascarides, which are a source of irritation. A simple and efficient remedy for these is salt and water, which may be thrown into the rectum with a syringe; or one ounce of spirits of turpentine, mixed with one pint of linseed oil, may be administered in a similar manner. High feeding, the accumulation of filth, dandruff, vermin, etc., is often the cause of the horse rubbing his tail. The treatment consists in the free use of soap and water, a change of diet to green food, and the application of a wash made of bicarbonate soda, one ounce, water two pints, prussic acid two drs; mix.—*National Live-Stock Journal*, Chicago.

OLD lady to druggist: "I want a box of canine pills." **Druggist:** "What's the matter with the dog?" **Old lady** (indignantly): "I want you to know, sir, that my husband is a gentleman!" **Druggist** puts up some quinine pills in profound silence.—*Druggist*.

THE DISEASES OF MONKEYS.—Mr. J. B. Sutton, in the *Lancet*, August 18th, enumerates the following as causes of death in captive monkeys: Tubercle, bronchitis, pneumonia, empyema, septic pneumonia, rickets, scrofula, typhoid fever, and intussusception; many also suffer from cataract. I have

a uterus, taken from a baboon, with acute retroflexion of the fundus associated with atrophy of its anterior wall. Hydatids of the peritoneum were found in two instances, but were not the direct cause of death.

REMARKABLE CURE OF CATARACT IN A DOG.—Dr. E. C. Board writes to the *Lancet*: "For the last nineteen months my little dog (now seventeen years old) has been getting very blind, and a cataract had formed in the right eye, so that she could not see in the least out of it. A few days ago she was playing with or teasing the kittens in the kitchen, when the mother flew at her and scratched her face. The dog gave a scream of pain and ran away, and upon the footman examining her a few minutes after, he found the cataract entirely gone. The eye discharged a good deal for a day or two, but it has quite healed, and the little dog evidently sees as well as ever."

THE STEREOSCOPE IN THE STUDY OF ANATOMY.—SIR: By the permission of M. Channeau, the director of the Lyons Veterinary College, the author of the *Comparative Anatomy* which is the text book of our veterinary colleges, I performed a series of experiments at Lyons with the object of ascertaining whether the stereoscope could not be used in illustrating anatomical subjects, and thereby much facilitating the study of anatomy.

At the request of the Veterinary Society of the Gironde, Bordeaux, a series of fifty of these stereoscopic views were sent to the veterinary department of the Bordeaux Exhibition, July, 1882.

I enclose the report of this society (taken from the Lyons Veterinary Journal, January, 1883) upon my collection, which I think may prove interesting to your readers.

SAM. FRANK ELLIMAN.

Lancaster House, Slough, Feb. 26.

Amongst the most curious of the subjects sent to the Veterinary Society of the Gironde, figures the stereoscope of Mr. Elliman, of Slough.

This stereoscope contains a series of fifty anatomical views of the horse, &c., photographed in the laboratory of anatomy of Professor Arloing, of the Veterinary College at Lyons, winter 1881 and 1882. Everybody knows with what fidelity the stereoscope represents full figures, especially solid bodies with a projecting surface, with a rectangular or polygonal base, as the cube, the pyramid, &c.

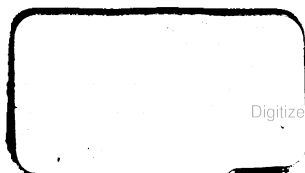
Applied to anatomical subjects, the stereoscope causes to stand out in a manner not less remarkable the complicated parts; it prolongs the view to the bottom of the great nervous cavities: it detaches the muscle from the bone which it covers; in short, it recalls to the student, as to the surgeon, the anatomical peculiarities belonging to each region of the body. One might say, to a certain point, that, thanks to this instrument, it is possible to study anatomy in one's own room; that is to say, without operating on the dead body, by the aid of which the conformation of the organs is generally studied. The application of the stereoscope to anatomical studies is, then, a very happy idea, and of which one must allow the Bordeaux Exhibition has given the first example—*Land and Water*.

COUNTWAY LIBRARY



HC 3ZYP /

~~HR 720~~

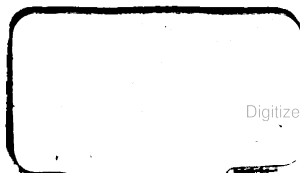


COUNTWAY LIBRARY



HC 3ZYP /

~~142720~~



COUNTWAY LIBRARY



HC 3ZYP /

~~HR 720~~



COUNTWAY LIBRARY



HC 3ZYP /

~~112720~~



